

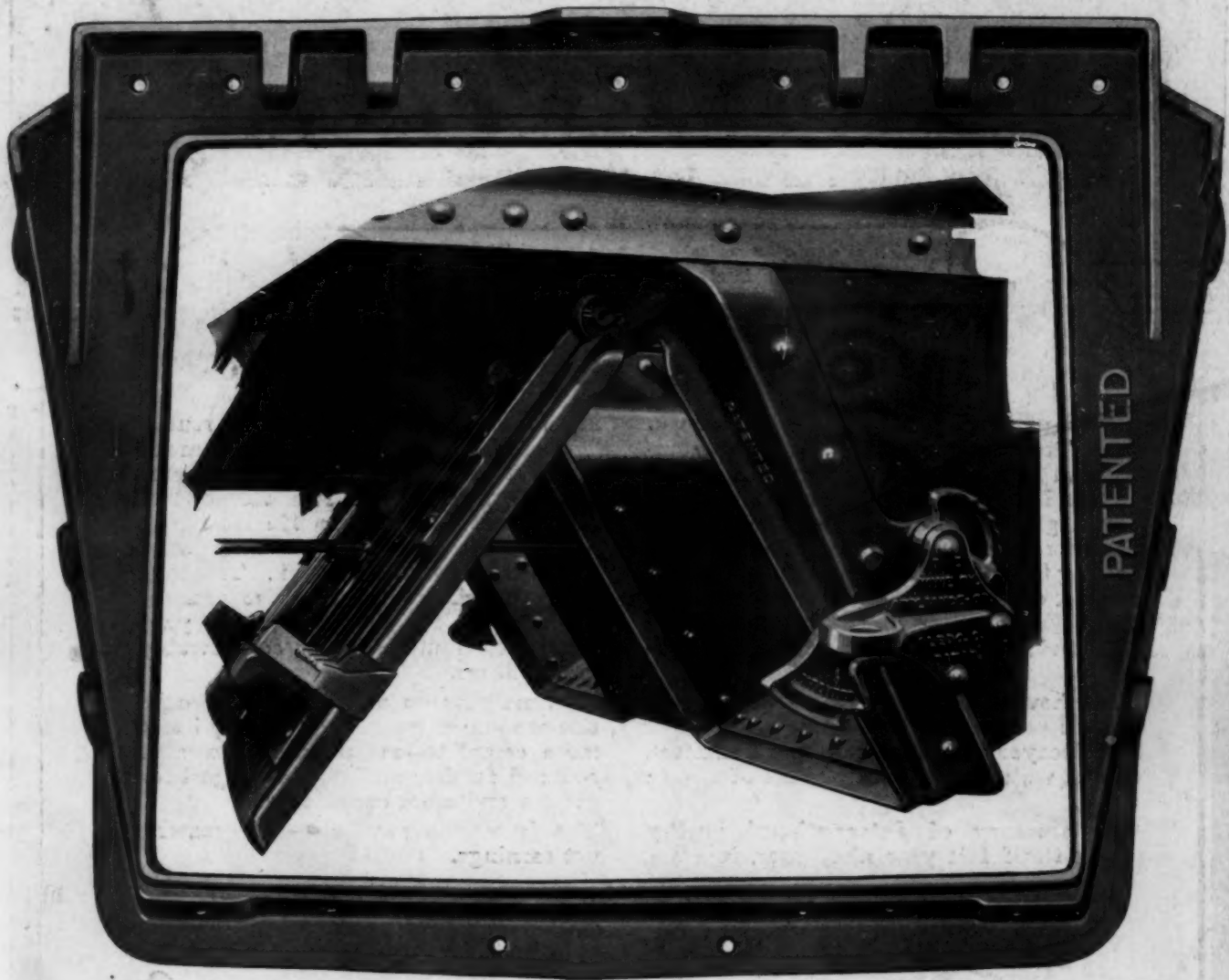
AUGUST 17, 1929



# Railway Age

FOUNDED IN 1856

## WINE CAST STEEL HOPPER FRAME AS APPLIED TO U. S. R. A. TWIN HOPPER CAR



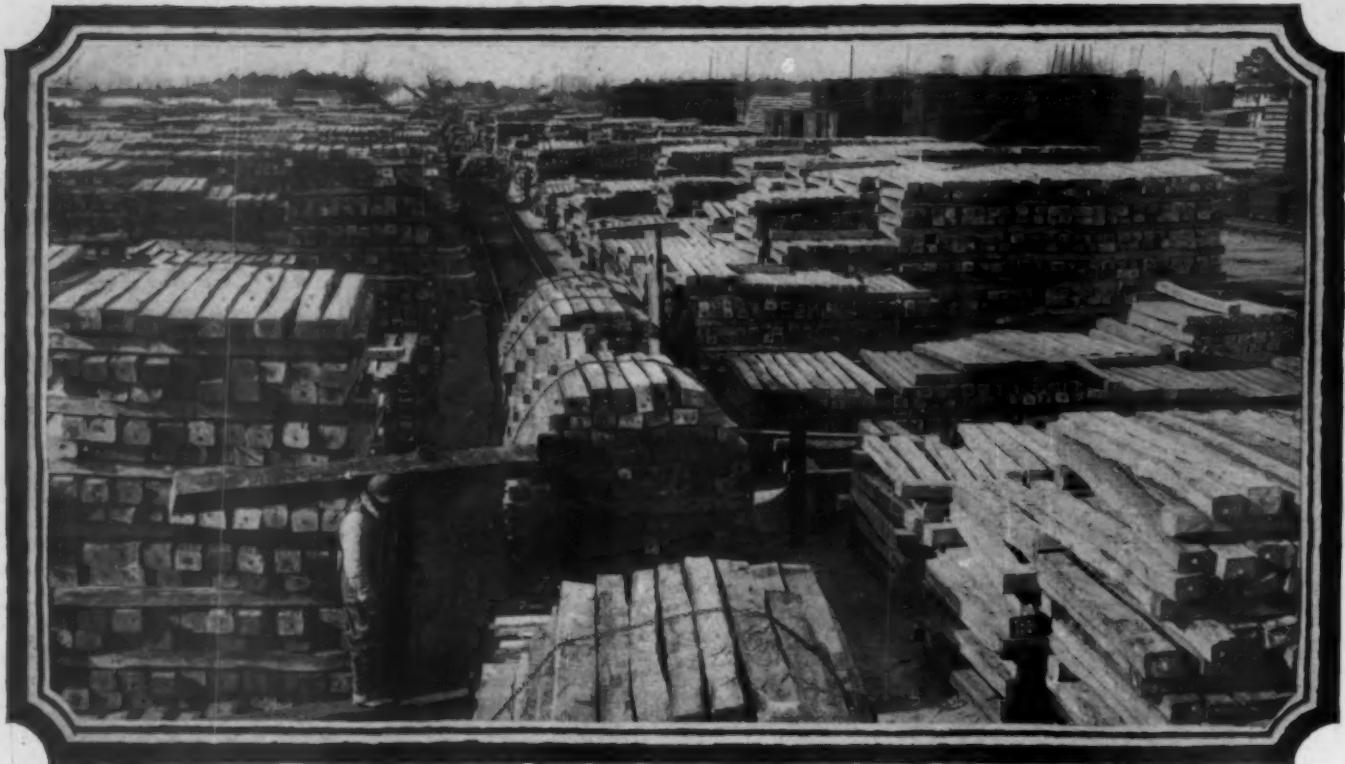
THE INTERLOCKING DOOR FIT PREVENTS LOSS OF LADING AROUND DOORS. THE FRAME CARRIES DOOR HINGE LUGS AND ALL DOOR LOCK FITTINGS, STIFFENS THE OUTSIDE HOPPER SHEET WHERE IT RECEIVES MOST ABUSE, DELAYS CORROSION AND HOPPER SHEET RENEWAL.

THE WINE RAILWAY APPLIANCE CO.

MUNSEY BLDG.  
WASHINGTON, D. C.

TOLEDO, OHIO

PEOPLES GAS BLDG.  
CHICAGO, ILL.



*This is one of a series on International Tie Service. How it helps pay dividends will appear in the August 31st issue.*

## Increase Net Earnings

**L**ET us get right down to the dollar and cents economy of *International* quality and see how it affects net earnings? If, for instance, your tie renewals run in the neighborhood of 225 per mile of track per year, then each mile of these tracks is costing \$275. per year more than necessary and net earnings are decreased proportionately. Is this not a startling amount in so important an item of railroad expenditure?

This, however, is the penalty of the premature removal of ties, due to undersized ties, decayed timber, or improper treatment, any of which cuts short the life of ties in track.

The economy of *International* quality makes itself felt year after year, increas-

ing net earnings by reducing tie renewals. The sound timber and good treatment in *International* ties will put your road in the 125 tie per year renewal class or better. A decrease from 225 to 125 tie renewals per year will increase net earnings at least \$275. for every mile of track. This is well worth striving for. Likewise reductions from 200 or 150 tie renewals per year to 125 or 100 would add very considerably to net earnings.

As time goes on and more *International* ties are put in track, the economy becomes more complete—maintenance charges are reduced further and net earnings become greater and more convincing.

The fewer the renewals—the greater the net earnings.

### International Creosoting & Construction Co.

General Offices — Galveston, Texas

Plants:      Texarkana      Beaumont      Galveston

*International*  
High Quality **2¢9** Treated Ties





Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York.

All communications should be addressed to the New York Office, 30 Church Street

EDWARD A. SIMMONS, *President*  
LUCIUS B. SHERMAN, *Vice-Pres.*  
HENRY LEE, *Vice-Pres.*  
SAMUEL O. DUNN, *Vice-Pres.*  
CECIL R. MILLS, *Vice-Pres.*  
FREDERICK H. THOMPSON, *Vice-Pres.*  
ROY V. WRIGHT, *Sec'y*  
JOHN T. DEMOTT, *Treas.*

CHICAGO:  
105 West Adams St.  
WASHINGTON:  
17th and H Streets, N. W.  
CLEVELAND:  
Terminal Tower  
SAN FRANCISCO:  
215 Market St.

#### Editorial Staff

SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*  
ELMER T. HOWSON, *Western Editor*  
H. F. LANE, *Washington Editor*

B. B. ADAMS  
C. B. PECK  
W. S. LACHER  
ALFRED G. OEHLER  
F. W. KRAEGER  
E. L. WOODWARD  
J. G. LYNE  
J. H. DUNN  
D. A. STEEL  
R. C. AUGUR  
R. A. DOSTER  
JOHN C. EMERY  
MARION B. RICHARDSON  
L. R. GURLEY  
H. C. WILCOX  
R. S. KENRICK  
NEAL D. HOWARD  
F. M. PATTERSON  
RICHARD W. BECKMAN  
LLOYD GEORGE  
CHARLES LAYNG  
GEORGE E. BOYD  
WALTER J. TAFT  
M. L. LEATH

*The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)*

Subscriptions including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign countries, not including daily editions, \$8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, \$1.00; foreign countries, \$2.00. Single copies, 25 cents each.

# Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 87

August 17, 1929

No. 7

## In this Issue

### Missouri Builds New Stock Pens at Prospect, Mo. .... Page 410

Modern feeding plant near Kansas City replaces facilities at Leeds and Osawatomic—Change made possible by better train speed.

### 4-8-4 Type Locomotive for the Canadian National ..... 414

Company has received twenty locomotives of this type designed for either passenger or freight runs over two or more divisions.

### Centenary of the Stourbridge Lion ..... 417

Honesdale, Pa., celebrates the centennial of the first locomotive run in America and unveils a monument commemorating the event.

#### EDITORIALS

Railway Taxes and Fuel Costs—a Contrast .....	407
Cooperage Practices .....	408
A New Form of Hazard .....	408
Train Length and Train Safety .....	409
Systematic Organization for Labor-Saving Equipment .....	409

#### GENERAL ARTICLES

Missouri Pacific Builds New Stock Pens at Prospect, Mo. ....	410
Freight Car Loading .....	413
4-8-4 Type Locomotives for the Canadian National .....	414
Centenary of the Stourbridge Lion .....	417
Manufacturers' Railway Eight-Wheel Switchers .....	418
Making the Most of Freight Cars, by R. N. Begien .....	419
Bird-Archer Type B Sludge Remover .....	421
Missouri Pacific Operates Budget for Inventories, by L. P. Krampf .....	422
Making Dollars from Dross .....	424
North Shore Line Installs Automatic Highway Crossing Gates .....	425
Accident Investigations, January .....	426
How the D. L. & W. Uses Tabulating Machines, by V. D. Thayer .....	429

#### COMMUNICATIONS AND BOOKS ..... 434

#### LOOKING BACKWARD ..... 435

#### ODDS AND ENDS OF RAILROADING ..... 436

#### NEWS OF THE WEEK ..... 437

*The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service*

# Continuously Controlled Constantly Visible Cab Signals



WHETHER "lost in the fog," or whether the view ahead is obstructed by curves, hills or tunnels; whether on mountain grades, or in fair weather or foul, "Union" continuously controlled, constantly visible cab signals permit your enginemen to proceed with speed, safety and confidence. Cab signals, constantly at the control point, permit the engineman to be ready for immediate action.

The net result is a uniform on-time performance which is so desirable to management, shippers and consumers, since it results in the scheduled delivery of merchandise; and to passengers, "Union" Cab Signals mean safe, on-time trips without the delays which are so vexatious in this fast-moving age.

"Union" Cab Signals bring to you a greater safety of operation because of the positive advance information of track conditions ahead under all weather and physical conditions; uniform, on-time schedules because they are always at the control point, and the engineman is thus ready for immediate action; lower operating ratio results through reduction of operating expense; reduced claims; a lower inventory, and satisfied customers.

District Offices

New York

Montreal

Chicago

St. Louis

San Francisco



# Railway Age

Vol. 87, No. 7

August 17, 1929

Table of Contents Appears on  
Page 5 of Advertising Section

## Railway Taxes and Fuel Costs—a Contrast

PERHAPS no fact is more significant as an illustration of prevailing tendencies in both government and industry in the United States than the fact that we have reached a time when the railways are paying more in taxes to the federal, state and local governments than they are paying for the fuel used in their locomotives. That, for the first time in history, their tax bill exceeded their fuel bill in 1928 is disclosed by statistics recently compiled to which public attention has not heretofore been called. Furthermore, in the first five months of 1929, when they were handling a record-breaking freight business, they reduced their fuel bill almost \$6,500,000, while their tax bill was increased almost \$11,000,000.

Throughout the history of the railways until last year their fuel bill ranked as the largest single item of their expenses excepting labor. Year after year, however, their tax bill has been gaining on their fuel bill with the result that it has finally passed it, and is promising to soon make it appear small by comparison.

The purchase and use of railway fuel are under the control of private management, and the railway fuel bill constantly declines. The taxes the railways must pay are determined by government authorities, and their taxes constantly increase. The economies the railways have been effecting in the use of fuel have been but a part of the economies they have been making in almost all branches of their business, as a result of which their total operating expenses were 22 per cent less in 1928 than when they reached their peak in 1920. Meantime, their taxes increased 43 per cent. Is the reduction of the one and the increase of the other justly attributable to the difference between the way in which industry and government are managed in the United States?

### *The Story of Fuel Costs*

In 1916 the Class I roads spent \$250,545,000 for fuel, or 7 per cent of their total earnings. In the same year they paid \$119,785,000 in taxes, or 4.4 per cent of their total earnings. Their fuel bill was rapidly and enormously increased during the war by increases in the price of coal and by congestions of traffic which made eco-

nomical operation impossible. In 1918, under government control, their fuel bill amounted to \$500,000,000, or 10.3 per cent of their total earnings. In 1920 it reached the record figure of \$675,000,000, or 10.9 per cent of total earnings.

In the depression which followed, the price of fuel sharply declined. As soon as business conditions began to become normal the railways, collectively and individually, commenced a nation-wide campaign to effect savings in the use of fuel. They improved their methods of educating and supervising the employees who actually handle fuel. They put their locomotives in better condition, and acquired thousands of new locomotives equipped with modern appliances which cause less fuel to be consumed in proportion to the power produced. The amount of coal consumed per one thousand gross ton-miles in freight service was reduced 27 per cent between 1920 and 1928. The total amount of fuel used in freight service was reduced 30,000,000 tons, and in passenger service 7,000,000 tons. On the basis of the average price paid in 1928 this represented a saving of about \$92,000,000 annually. The actual reduction in the total annual fuel bill, due both to the decline in the price of fuel and the improvement effected in its utilization, was from \$675,000,000 in 1920 to \$354,200,000 in 1928, or about 47 per cent. The fuel bill consumed 10.9 per cent of total railway earnings in 1920 and only 5.8 per cent in 1928.

### *The Story of the Rise of Taxes*

The increase in railway taxes between 1916 and 1920 was relatively about as large as in the fuel bill. Taxes in 1916 were about \$120,000,000, and in 1920 were \$272,000,000, or 4.4 per cent of total railway earnings. After 1920 all resemblance between the trends of fuel costs and taxes ceased. Taxes continued rapidly to increase. In 1920 they were \$400,000,000 less than the fuel bill. In 1928 they were \$389,432,000, or \$35,000,000 more than the fuel bill. In the first five months of 1929 they were over \$20,000,000 more than the fuel bill and at that rate should exceed it in the entire year by \$50,000,000. The fuel bill in 1928 was only 5.8 per cent of total railway earnings, as compared with 10.9 per cent in 1920. The

tax bill in 1928 was 6.4 per cent of total earnings, as compared with 4.4 per cent in 1920.

The influences affecting results in practically all industries apparently are similar to those affecting results in the railway industry. In almost all our industries private management is increasing efficiency and economy in the use of fuel and in almost every other way, while increases in taxes are absorbing large parts of the savings made. This is one of the principal causes of almost every important economic problem with which the nation is confronted. Doctor Whitney Coombs, economist of the United States Bureau of Agricultural Economics, said in a recent address: "Farm taxes have increased nearly 160 per cent in the last 15 years, whereas land values are now about 20 per cent higher than in 1913." Increased taxes are one of the principal causes of the farm problem, but who is doing anything about them?

### *Unwise Government Expenditures*

With increased taxes due to mounting government expenditures consuming a large part of the savings effected by the introduction of improved methods and machinery in the railroad and other industries, it seems remarkable that so many business men who are familiar with prevailing tendencies in industry and government should favor, with practically no previous investigation, projects that will accentuate these tendencies. How many business men have really studied the economics of transportation enough to have any intelligent idea of what they are doing when they advocate huge expenditures for the extensive development of inland waterways?

The Institute of Economics of the Brookings Institution recently has published a book entitled "The St. Lawrence Navigation and Power Project," by Harold G. Moulton, Charles S. Morgan and Adah L. Lee. The St. Lawrence waterway project has been advocated as a means of reducing transportation costs, and especially of enabling the farmer to get more for his grain by reduction of the rates for transporting it to Europe. In their very thorough study of this project the authors of the book mentioned reach the conclusion that its cost would vastly exceed all previous estimates, while the traffic that would move by the waterway would be only a fraction of the amount claimed by its advocates.

Their conclusions are summarized in a statement to the effect that the maximum saving in grain rates that could be expected to result from the construction of the St. Lawrence waterway would be four cents a bushel, while the cost to the taxpayers of providing the means of effecting this saving would be 11 cents a bushel. On the Erie barge canal every dollar that is saved in freight rates is effected at a cost of \$2.50 to the taxpayers of New York State. Owing to political influences the government is always likely to choose unwisely the projects in which it invests the public's capital, to be highly wasteful in investing this capital, and to fail to get any return upon it, all with the result of burdening the taxpayer.

How much of the constant increases in taxes with

which the property and industry of the country are being burdened are due to the course of business interests in encouraging the government to make expenditures which are indefensible from the standpoint of sound economic policy?

## Cooperage Practices

THE expense for cooperage in the Chicago terminal amounts to about \$120,000 per year, and relatively as much at other terminals. Taken in the aggregate, this represents a serious burden on the railways, a burden which is added to by the acceptance of shipments that do not comply with classification requirements. Faulty loading and trimming and improperly prepared cars also contribute to this expense. However, the re-used container is probably the largest factor contributing to re-cooperage; for this reason it might be well to consider the advisability of putting shipments in re-used containers under a separate tariff which would provide a higher classification for the commodity than if it were packed in new containers.

There should be no let-up in re-cooperage activities, as defective containers present a fruitful source of claims, but, in conjunction with the campaigns to reduce claim losses, the matter of cooperage should also be considered. By eliminating the causes which produce defective containers, the cooperage expense may be reduced materially.

## A New Form of Hazard

THE disastrous wreck on the Chicago, Rock Island & Pacific near Stratton, Colo., on July 18, in which eight passengers and two employees were killed and 39 passengers injured, brings to light a condition which is rapidly becoming serious. This accident occurred at a bridge crossing an arroyo which is normally dry. The railway crossed this stream on an 85-ft. deck plate girder span supported on concrete abutments, which provided a waterway sufficient for a drainage area of more than 130 square miles. About three years ago a highway was constructed along and on the up stream side of the railway in which an opening of only 287 sq. ft. was provided for the stream, or sufficient to handle the drainage for less than five square miles. To make matters worse the highway bridge was built at an angle with the stream, thereby reducing the effectiveness of even the small opening made by at least a fourth.

Shortly prior to the wreck a cloudburst occurred about 20 miles upstream and the water backed up against the highway bridge until it gave way when, by reason of the location of the highway structure, the water was deflected with increased force against the railway embankment instead of following its normal channel down the stream bed under the railway bridge.



As a result a part of the railway slope was washed out, causing the track to settle and leading to the derailment. If this were an isolated incident, it would not be worthy of comment. However, with the rapid spread throughout the country of improved highway construction, commonly parallel with the railways and more frequently on the upstream side, such incidents are becoming very numerous.

Through years of experience railway engineers have learned to appreciate the necessity of ascertaining the area draining through each opening under their tracks and of fixing the size of the opening after giving careful consideration to the rate of run-off and other characteristics of the particular area in question. On much of the highway work now being done, the engineering is not of this high order, and as a result hundreds of bridges are being built that are inadequate in area, location or other essential characteristics. Possibly this may be due in part to the fact that any hazard to highway travel resulting from the weakening or loss of a bridge is relatively unimportant in itself. The accident at Stratton, however, and other similar but less serious washouts elsewhere in the country, show that the results of such short-comings in construction are not confined to their effects on highway travel. They demonstrate the importance of the development of some form of supervision of the building of highway structures adjacent to railway lines that will insure that they will conform to the same reasonable engineering requirements as those of the railways. No measures less than this will safeguard travel on the railways.

It is appreciated that the problem of effecting such supervision is not a simple one because of the multiplicity of municipal, county and state organizations that are engaged in highway construction. However, because of the fact that railway travel is essentially interstate in character, it would appear possible to inaugurate some form of national supervision over highway structures that would give the railways the protection that is essential to security of travel.

## Train Length and Train Safety

**I**N the last three or four years, the average number of cars per freight train has been increased about 17.5 per cent, while freight train speeds have increased about 14 per cent. It has been maintained in some quarters that longer and faster freight trains result in correspondingly increased hazards, but this contention is not borne out by the facts, for an analysis discloses that the reverse is true to a great extent. The Interstate Commerce Commission, in its accident investigations, has not found a single case where the primary cause has been increased length of the train. Furthermore, the number of train accidents has decreased nearly 40 per cent, the total number of persons killed in such accidents has decreased 30 per cent and the total number injured has decreased nearly 40 per cent.

Much of this increased safety is attributable to the efforts put forth in safety campaigns, but the figures indicate that the increased length and speed of freight trains have certainly not increased the hazards.

## Systematic Organization for Labor-Saving Equipment

**T**HE outstanding development in maintenance-of-way practices in the last few years is the marked trend toward the use of labor-saving equipment. The railways are now becoming so thoroughly convinced of the economy of doing work mechanically wherever such equipment is available that on not a few roads it is being bought more rapidly than the maintenance-of-way department is assimilating it. This problem is of sufficient importance to warrant the attention of executive officers, not primarily to curtail expenditures for mechanical aids but rather to insure that the necessary steps are being taken to enable the equipment so purchased to be employed most efficiently.

Not infrequently equipment is purchased by general officers and sent out in the field, only to stand idle because of lack of enthusiasm, inertia or insufficient training of the men to whom the device is assigned. A study of performance records may also show a surprisingly high proportion of idle time awaiting repair parts or supplies. Again, loss of time frequently results when a machine is transferred from one subdivision to another by reason of lack of co-ordination of programs.

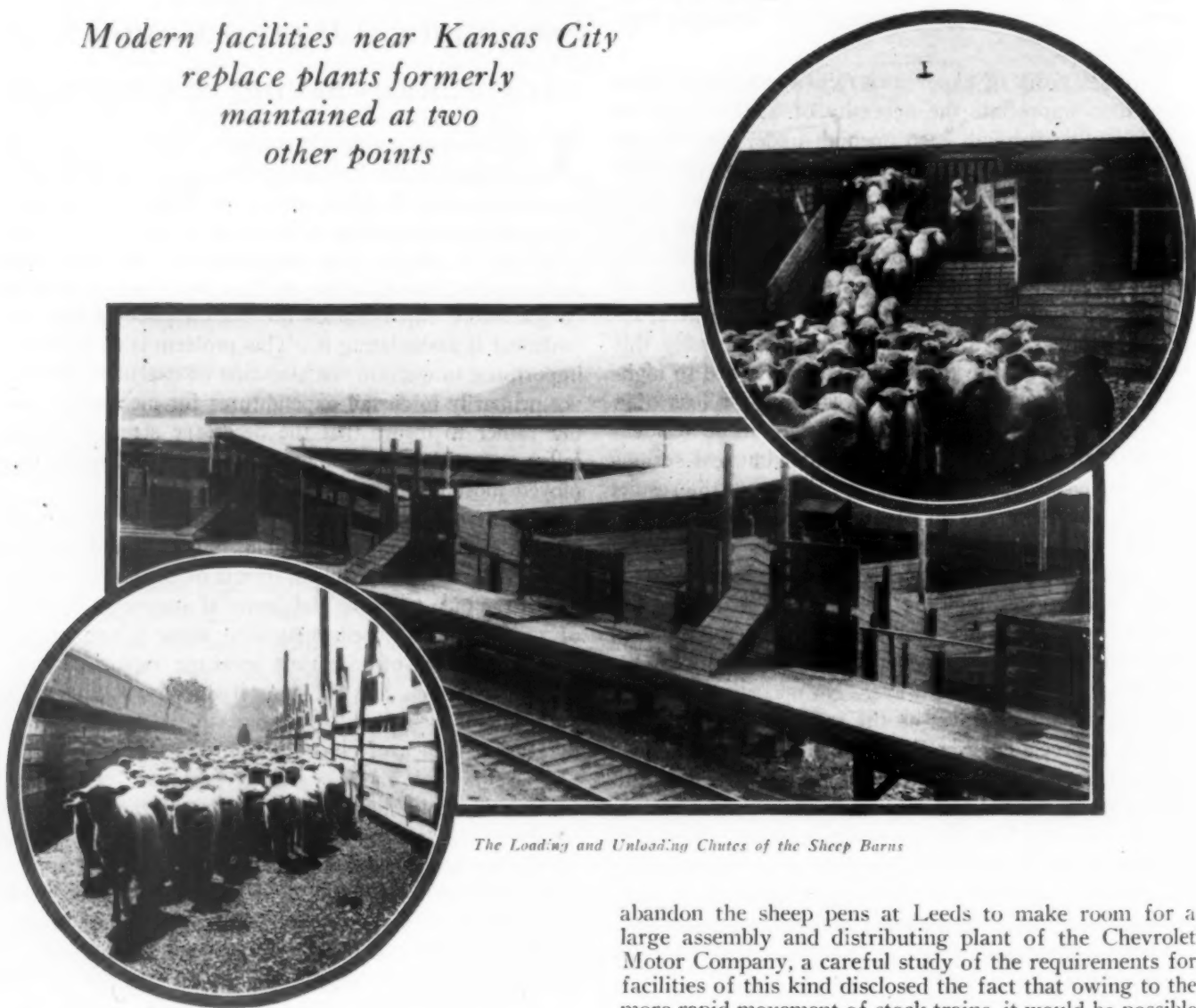
There is still another serious problem. To be efficient, this equipment must be in condition for work whenever there is work to be done. Yet as the amount of this equipment has increased, the means for its repair has, in general, failed to keep pace. At first, when the number of devices was limited, it was natural that they were turned over to the adjacent mechanical department shops for repair, but as the amount of this work increased and, still more important, as the construction of the equipment has become more complicated, this arrangement has become less satisfactory. As a result while much of this equipment is still being maintained in the mechanical shops incident to the larger work on cars and locomotives the results leave much to be desired with respect both to service and to cost.

The above are indicative of the problems arising out of the increasing use of labor-saving equipment—problems which must be universally recognized and solved if the roads are to receive their full return from the liberal investments which they are now making in this direction. These investments are now so large on many roads as to warrant the creation within the maintenance-of-way department of an organization upon which responsibility can be concentrated for the efficient operation of labor-saving equipment in all of its various phases. Only by such concentration of responsibility can the best results be secured.



# Missouri Pacific Builds New Stock Pens at Prospect, Mo.

*Modern facilities near Kansas City  
replace plants formerly  
maintained at two  
other points*



*The Loading and Unloading Chutes of the Sheep Pens*

**T**HE effect of the marked increase in the speed of freight trains on the Missouri Pacific is evident in the rearrangement of the facilities provided for the accommodation of the sheep and cattle moving into Kansas City from the Southwest. Until recently this railway maintained facilities for the resting, feeding, reconsignment and sale of sheep at Leeds, Mo., nine miles from Kansas City on the main line to the West and Southwest, at which point sheep from Kansas, New Mexico, Colorado, Oklahoma, Texas and Utah were unloaded for resting and feeding and reloaded for delivery to the stock yards at Kansas City or for movement to St. Joseph, Mo. or St. Louis and beyond. In the past it had been found that the haul for stock from the more remote points, such as Pueblo, Colo., for example, was so long as to require an intermediate stop for resting and feeding, and for years facilities for feeding sheep and cattle were maintained at Osawatomie, Kan. for this purpose.

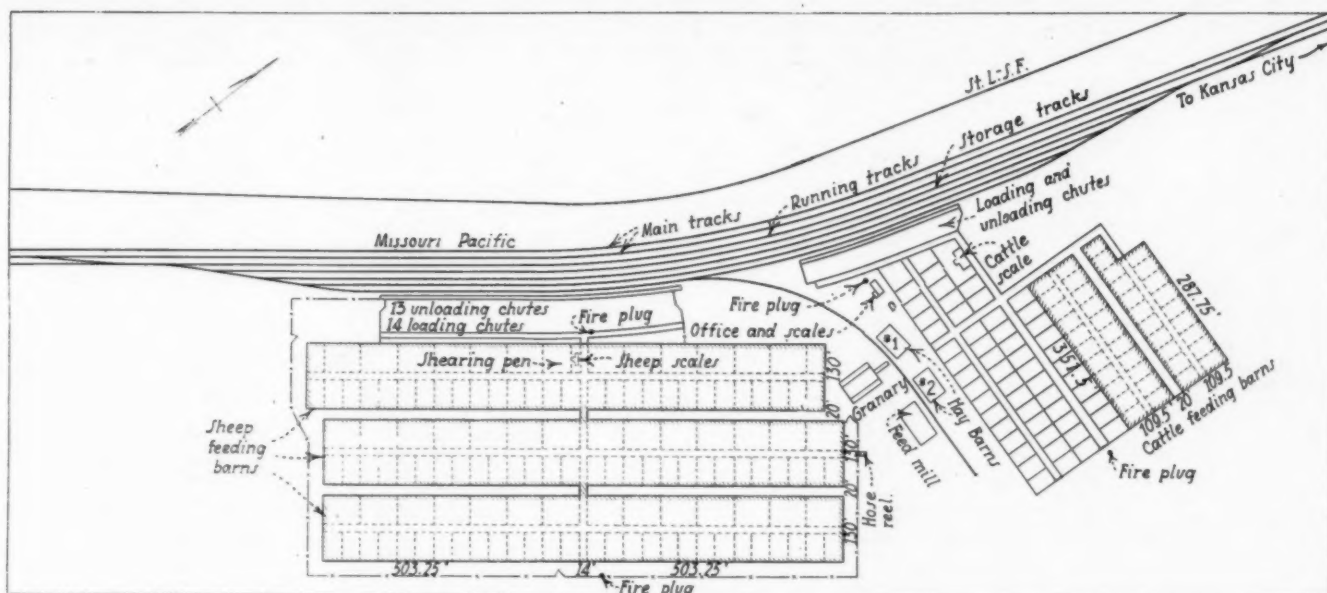
However, when it was found necessary a year ago to

abandon the sheep pens at Leeds to make room for a large assembly and distributing plant of the Chevrolet Motor Company, a careful study of the requirements for facilities of this kind disclosed the fact that owing to the more rapid movement of stock trains, it would be possible to make the run from Pueblo to some point close to Kansas City without an intermediate stop for resting and feeding. Accordingly it was decided to select a site for new stock pens in the vicinity of Leeds and construct on that site facilities which would not only take the place of those to be abandoned at Leeds, but which would also supplant the stock pens at Osawatomie, which could thereafter be abandoned.

## **New Facilities at Prospect, Mo.**

A suitable site was found at Prospect, Mo., about 6 miles south of Leeds on the main line of the Central Kansas-Colorado division. Here about 70 acres of land, lying between the main tracks and the Blue river, was purchased to provide space for the yard and the necessary service tracks, the acreage being considerably in excess of present requirements. Owing to the fact that the area was broken by a series of gulleys leading to the river, the grading required to prepare the site for use was rather heavy, amounting to 105,600 cu. yd.

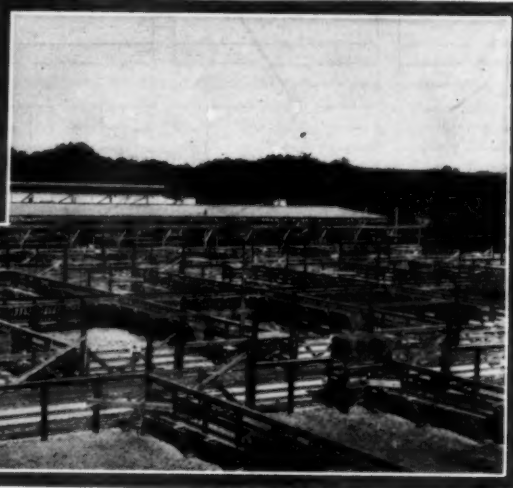
The facilities for sheep, as shown on the general plan.



General Plan of the New Stock Yards

consist of three barns, served by 14 loading and 13 unloading pens and having a capacity of 200 carloads. For cattle, there are 56 uncovered pens, with a capacity of one carload each, and one pen with a capacity of two carloads, in addition to two barns containing 20 and 22

longitudinal alley 14 ft. wide with 28 pens 36 ft. wide by 58 ft. deep (one car capacity) on one side and 14 double or two-car pens on the opposite side, or a total capacity of 168 carloads for the three barns. This capacity can be increased to 200 cars by placing more than two carloads of sheep in the large pens when one owner has a number of cars unloaded at one time. A transverse alley also 14 ft. wide, extends through all three barns and connects with the loading chutes. One double-pen space next to the alley in the barn nearest the loading chutes is occupied in part by an eight-ton platform scale, together with the necessary chutes to facilitate the weighing of sheep. This



Two Views of the Cattle Pens and Barns

one-car pens respectively. These stock facilities are served by eight loading and unloading pens, of one car capacity each, with the necessary chutes, alleys, gates, etc.

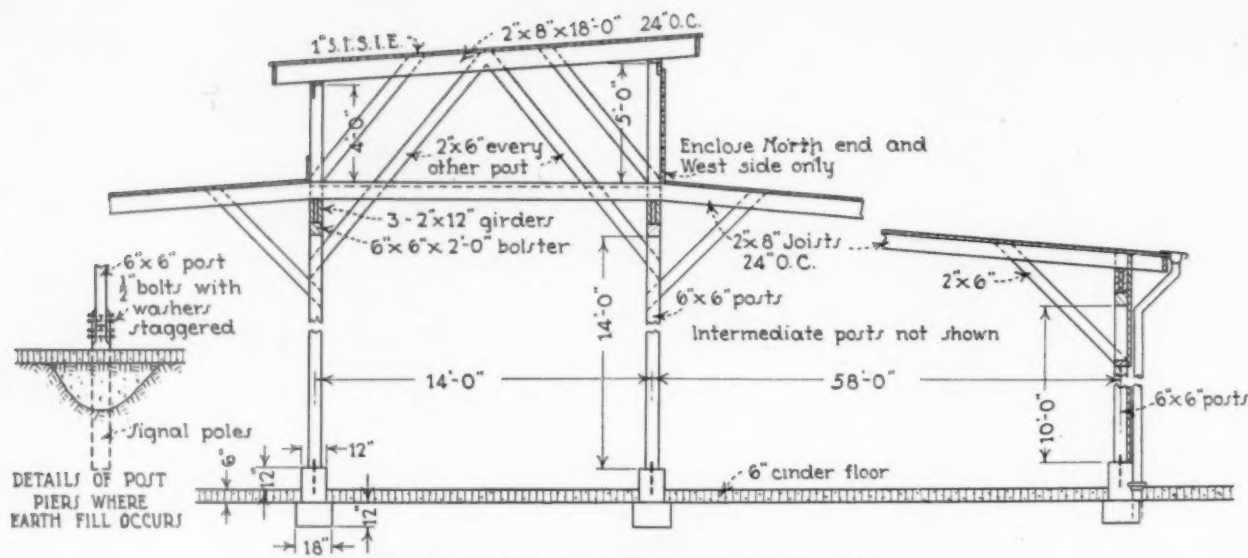
Auxiliary facilities include a granary, two hay barns, a feed mill, an elevator and an office. There are four storage tracks from 1,622 ft. to 2,155 ft. in length connecting at each end into a running track which parallels the main tracks for a distance of 3,588 ft., while at one end of the yard there is a switching tail track 1,098 ft. long. The hay barns, granary, etc., are served by a 745-ft. spur track.

#### The Sheep Barns

The sheep barns are 1,020.5 ft. long by 130 ft. wide, set side by side and 20 ft. apart. Each barn has a central

space is also occupied by a shearing pen, equipped to accommodate six electrically operated shears, the necessary stalls, etc. A wooden bin to receive the fleece removed from the sheep has been provided at a sufficient elevation above the ground so that bags capable of holding 300 lb. of wool, or 60 to 65 fleece, may be suspended underneath.

Each one-car pen is provided with wooden hay mangers on three sides, a water trough in the center made of 18-gage galvanized metal and three wooden self-feeders for feeds, placed close to the alley for convenient



The Sheep Barns Are of Simple Construction

refilling. The fence on the alley side is finished with a platform 2 ft. 4 in. wide at an elevation 4 ft. above the floor to provide storage for baled hay. Corresponding facilities are provided in the larger pens.

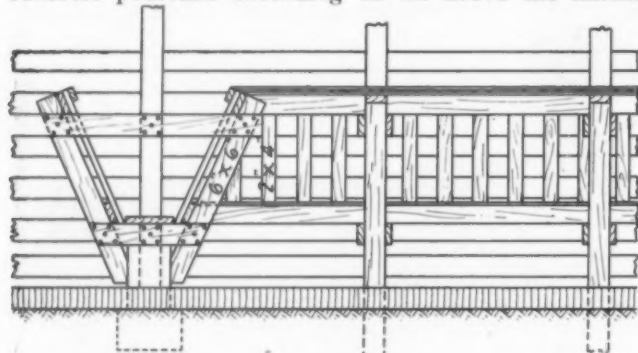
The sheep barns are of an exceedingly simple frame construction, with 6-in. by 6-in. posts set 18 ft. center to center longitudinally and from 14 ft. to 20 ft. 7 in. transversely, supporting longitudinal girders made of three 2-in. by 12-in. planks that carry 2-in. by 8-in. rafters supporting 1-in. roof boards. There is a monitor over the longitudinal alleys to provide ventilation and improved natural lighting. The roof is covered with asbestos roofing. The sides of the barns and the west sides of the monitors are enclosed with one-inch boards, but all sides are provided with hinged shutters that permit of opening about one-third of the wall area. Where the barns are on the natural ground, the posts are set on concrete pedestals extending 12 in. above the finished

grade, but where the barns are on filled ground, the posts were set on creosoted piles of sufficient length to reach the original ground surface. All floor space within the barns, the loading pens, alleys, etc., is paved with six inches of cinders or chatts.

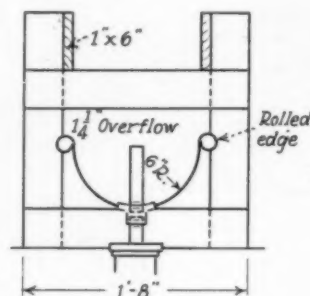
#### Ample Drainage Provided

Careful attention was given to drainage. The buildings are provided with six-inch galvanized iron gutters served by six-inch downspouts 54 ft. apart. These downspouts connect with lateral drains in the exterior alleys which lead to main sewers at the two quarter points of the buildings, these sewers having outfalls at the river. Manholes are provided at each intersection and a catch basin is provided at the upper end of each sewer to drain the area occupied by the loading pens.

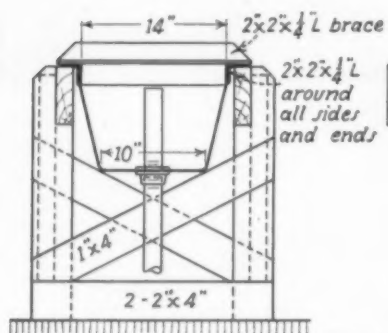
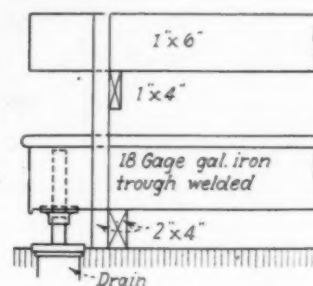
The loading and unloading pens alternate, the latter consisting of single pens large enough to hold a full car-



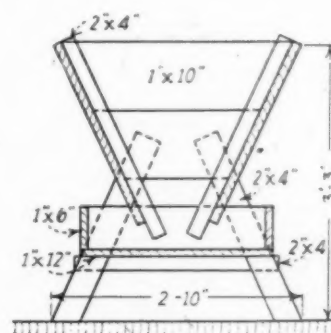
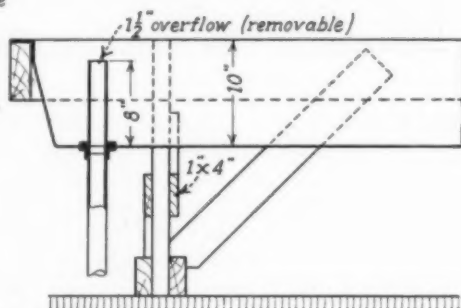
Hay Manger in Cattle Pens



Water Trough for Sheep



Water Trough for Cattle



Feed Box for Sheep

Details of the Mangers, Water Troughs and a Feed Box



load of sheep with a fixed chute leading up to the car-floor level and a portable ramp to the upper deck. The loading pens are divided to separate the sheep for the two decks and have fixed chutes for access to each.

The cattle pens, both covered and uncovered, are 48 ft. long by 32 ft. wide and are served by alleys 13½ ft. wide. Hay mangers are provided for the full length of one end and half the length of the two sides. There is a galvanized iron water trough 16 ft. long against one side, and in the barns, each pen is provided also with a 16-ft. feed trough. The fences, which are 5 ft. 7 in. high, are constructed with 6-in. posts, cut from creosoted poles, spaced 5 ft. 4 in. center to center, and carry six lines of 2-in. by 6-in. planks. The gate posts, which are 8 in. by 8 in., are set in concrete and extend to a height of 11 ft. above the ground to permit the use of an overhead cross strut, consisting of a 4-in. by 8-in. stick spanning between the tops of the adjacent posts.

The construction of the cattle barns is much like that of the sheep barns except that the south walls have been left open to a height of 9 ft. 7 in. Provision for drainage also corresponds to that provided in the sheep barns. The ground surface in the cattle pens is also covered with six inches of cinders or chatts except that rock screenings were used to top off in the loading pens and the alleys.

### The Auxiliary Facilities

The hay barns, each 61 ft. by 41 ft., the granary, 70 ft. by 50 ft., and the feed mill, 80 ft. by 40 ft. in plan, are all of frame construction with galvanized iron siding. The granary is divided into eight bins, each of which holds a carload of feed. A conveyor has been provided for the delivery of this feed from a hopper adjacent to the service track to the various bins. Feed for delivery to any of the pens is weighed on a platform scale at the office, a one-story frame building 40 ft. by 14 ft.

A total of 2,052,000 ft. b.m. of lumber was required in the construction of the sheep and cattle barns, exclusive of the open cattle pens. Of this amount, 1,524,000 ft. b.m. was required for the sheep barns and 538,000 ft. b.m. for the cattle barns. About eighteen per cent of this lumber represents material salvaged in the removal of the stock pen facilities at Leeds and Osawatomic.

Fire protection was given careful consideration. Water for this purpose and for operating use is supplied by a six-in. line connected with the Kansas City water supply system west of the tracks. Two branches, also of six-inch pipe are carried through the center of the sheep barns to their east side and through to the east side of the cattle pens, respectively. Fire hydrants with couplings for Kansas City fire department apparatus are provided at five suitably distributed points on the six-inch lines. These hydrants may be used also by employees of the yards for 2½-in. hose lines carried on two carts, having reels for 300 ft. of hose that are housed in suitably located sheds.

The six-inch pipe lines also serve as mains for grids of 2-in. and 1½-in. pipes that lead to hydrants provided with 250 ft. of 1¼-in. hose enclosed in boxes with hinged doors. There are 9 of these in and around the cattle pens and 18 of them at the sheep barns. All of these hose boxes are in or adjacent to the alleys between the barns where they are of easy access.

The barns are all provided with artificial illumination by 50-watt overhead lamps in the alleys. These are spaced 32 ft. center to center in the cattle barns and 36 ft. apart in the sheep sheds. Lights are also provided over the loading pens.

The entire project for the construction of these pens was under the direction of E. A. Hadley, chief engineer

of the Missouri Pacific. C. R. Chevalier, assistant engineer, St. Louis, Mo. supervised the construction as resident engineer. The contractor was the List and Weatherly Construction Company of St. Louis, Mo.

## Freight Car Loading

WASHINGTON, D. C.

REVENUE freight cars loaded in the week ended August 3 totaled 1,104,193, which was 3,132 in excess of the preceding week, 55,372 greater than the total for the corresponding week a year ago and 80,155 greater than the corresponding week in 1927. All districts except the Southern, showed increases when compared with the corresponding week last year—the decrease in the Southern district being 1,643 cars. Likewise there were increases in the loadings of all classes of commodities, except live stock, when compared with last year, the decrease in live stock loadings being 1,284 cars. Details by districts and commodities for the week, compared with similar weeks in 1928 and 1927, are given in the accompanying table.

### Revenue Freight Car Loading

Week Ended Saturday, August 3, 1929

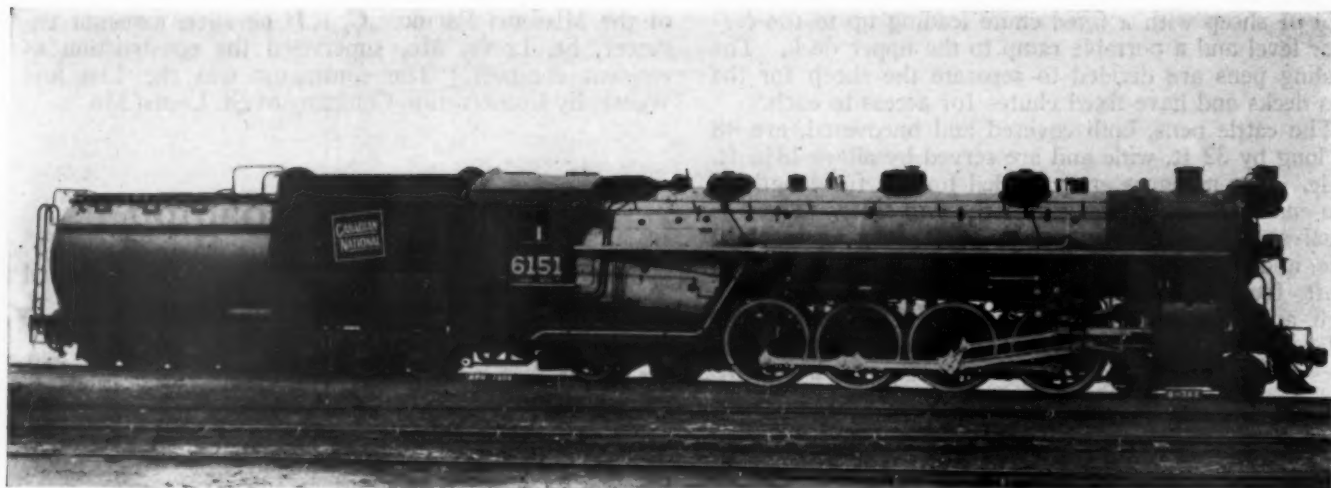
Districts	1929	1928	1927
Eastern	249,379	238,292	235,268
Allegheny	226,490	212,619	206,045
Pocahontas	59,859	55,518	59,945
Southern	142,703	144,346	146,625
Northwestern	174,917	158,449	158,993
Central Western	167,377	158,702	143,340
Southwestern	83,468	80,895	73,822
Total West Dists	425,762	398,046	376,155
Total All Roads	1,104,193	1,048,821	1,024,038
Commodities			
Grain and Grain Products	74,875	55,847	51,839
Live Stock	21,603	22,887	25,176
Coal	162,842	154,466	156,431
Coke	11,910	9,099	9,548
Forest Products	67,534	66,157	67,623
Ore	74,060	62,296	62,319
Mdse L. C. L.	259,398	257,194	259,564
Miscellaneous	431,971	420,875	391,538
August 3, 1929	1,104,193	1,048,821	1,024,038
July 27, 1929	1,101,061	1,034,326	1,044,697
July 20, 1929	1,078,695	1,033,843	1,012,585
July 13, 1929	1,064,632	1,024,925	1,017,394
July 6, 1929	908,832	850,947	839,085
Cumulative totals, 32 wks.	30,854,351	29,454,635	30,458,839

### Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended August 3 totalled 70,033 cars, a decrease from the previous week of 23 cars and an increase over the same week last year of 1,500 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
Aug. 3, 1929	70,033	38,381
July 27, 1929	70,056	38,885
July 20, 1929	71,831	37,911
Aug. 4, 1928	68,533	38,476
Cumulative Totals for Canada		
Aug. 3, 1929	2,055,159	1,293,110
Aug. 4, 1928	2,000,383	1,207,598
Aug. 6, 1927	1,878,936	1,170,917

SIXTY FIVE DOLLARS is the amount of damage which a reckless driver has recently had to pay for disregarding the signal of a watchman at a crossing on the Reading; his automobile having struck a track car and the railroad company having proceeded against him for the damage done to the car. At the same time, the road made the automobile driver pay \$106 on account of bodily injury inflicted on the railroad employee. Mr. Warfel (Editor of the Steam Railroad Section of the National Safety Council) publishing this news item, observes that railroads thus proceeding against careless wayfarers at crossings can make a more lasting impression than the use of poster pictures can ever be expected to do.



Canadian National 4-8-4 Type Locomotive Built by the Montreal Locomotive Works, Ltd.

## 4-8-4 Type Locomotive for the Canadian National

*Designed for use in either passenger or fast freight service—  
Tractive force, 56,800*

**T**WENTY 4-8-4 type locomotives were recently delivered to the Canadian National by the Montreal Locomotive Works, Ltd., which are designed for either passenger or fast freight service. These Locomotives, which are known on that railroad as the Northern type, are to be used on long runs which extend over two or more divisions. They have 73-in. drivers, 25½-in. by 30-in. cylinders, and the boilers carry a pressure of 250 lb. The total weight of the engine is 383,000 lb., of which 232,200 lb. is carried on the drivers.

The main frames are of nickel-carbon steel, annealed, while the cradle castings are of Commonwealth design. The shoes and wedges are of cast iron, except at the main boxes. The main shoes and wedges are of bronze. The cylinders are of nickel iron, with Hunt-Spiller bushings in both cylinders and valve chests. The pistons are of Canadian National standard built-up type, with Hunt-Spiller bull rings and Universal sectional piston packing rings.

### The Engine and Trailer Trucks

The engine truck is a four-wheel outside bearing truck with floating bushing bearings, grease lubricated. The truck wheels are steel tired with cast-steel spoke centers. The truck frames are of Commonwealth design and are equipped with the Economy constant resistance lateral motion devices. The truck boxes are of Vanadium cast steel. High grade cast-iron fixed bushings are pressed in, and 7-in. by 10-in. bronze bearings revolve between the journal and the iron bushing. A removable collar on the end of the axle holds the bearing in place and, at the same time, by its lateral movement pumps the grease into the bearing. The cover contains a removable plug for applying grease. A ¾-in. bronze liner is applied on the inside face of the box.

The trailing truck is of four-wheel Commonwealth design, having steel-tired wheels 34½ in. in diameter on the front axle and 48 in. in diameter on the rear axle. front axle floats with a total lateral of 1¼ in., while the rear axle has a total lateral of ¾ in. The boxes are of the floating-bushing type, similar to the engine-truck boxes, and are grease lubricated.

The boiler is of the straight-top type, with a radially stayed firebox. The inside diameter of the front course is 80⅞ in., and the outside diameter of the largest course is 90 in. In order to save weight the shell courses have been made of silicon steel having a tensile strength of 70,000 to 83,000 lb. and a minimum yield point of 38,000 lb.

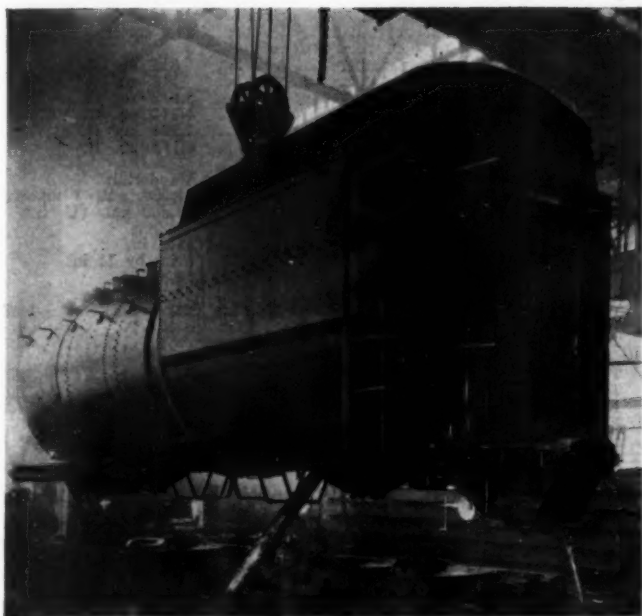
The main driving boxes are equipped with floating bushing bearings developed on the Canadian National. All other driving boxes have the standard bearings with Franklin grease cellars and driving-box spreaders. The back end of the main rod and the intermediate side-rod connection are also equipped with floating bushing bearings of Canadian National design.

The locomotives are fitted with the Baker valve gear, with a maximum travel in forward motion of 9 in., set to give 1-5/16-in. lap, 5/16-in. lead, and 1/16-in. exhaust clearance. The piston valve is of the four-ringed type.

The cylinders and valves are lubricated by four-feed Nathan mechanical lubricators of 16 pints capacity for long runs. The auxiliaries are lubricated by a three-feed Detroit hydrostatic lubricator which is located in the cab. The Alemite system of grease lubrication is applied to valve motion, spring rigging, lateral-motion device, knuckle pins, shoes and wedges, wheel hubs, brake pins, tender-truck swing bolster, hanger pins and equalizer pins.

The cab is of the short-vestibule type, of steel construc-





View Showing the Forward Construction of the Tender

tion with wood lining. Canadian National standard turrets are located in front of the cab. The left turret is supplied with superheated steam by a 3-in. pipe leading from a connection on the superheater header, while the right turret is supplied with saturated steam from a direct connection to the boiler. Superheated steam is supplied to the air pump, feedwater-heater pump, stoker and headlight generator, while saturated steam is supplied to the steam-heat line, inspirator, lubricator and other small auxiliaries.

The whistle—Canadian National standard four-chime—is located on the left side of the smokebox near the

stack, on the 3-in. superheated-steam line, and is operated by a wire cable carried through the handrail on the left-hand side.

A common exhaust pipe on the left side conveys exhaust steam from the air pump and feedwater pump through a tee-connection into the feedwater heated located on top of the smokebox.

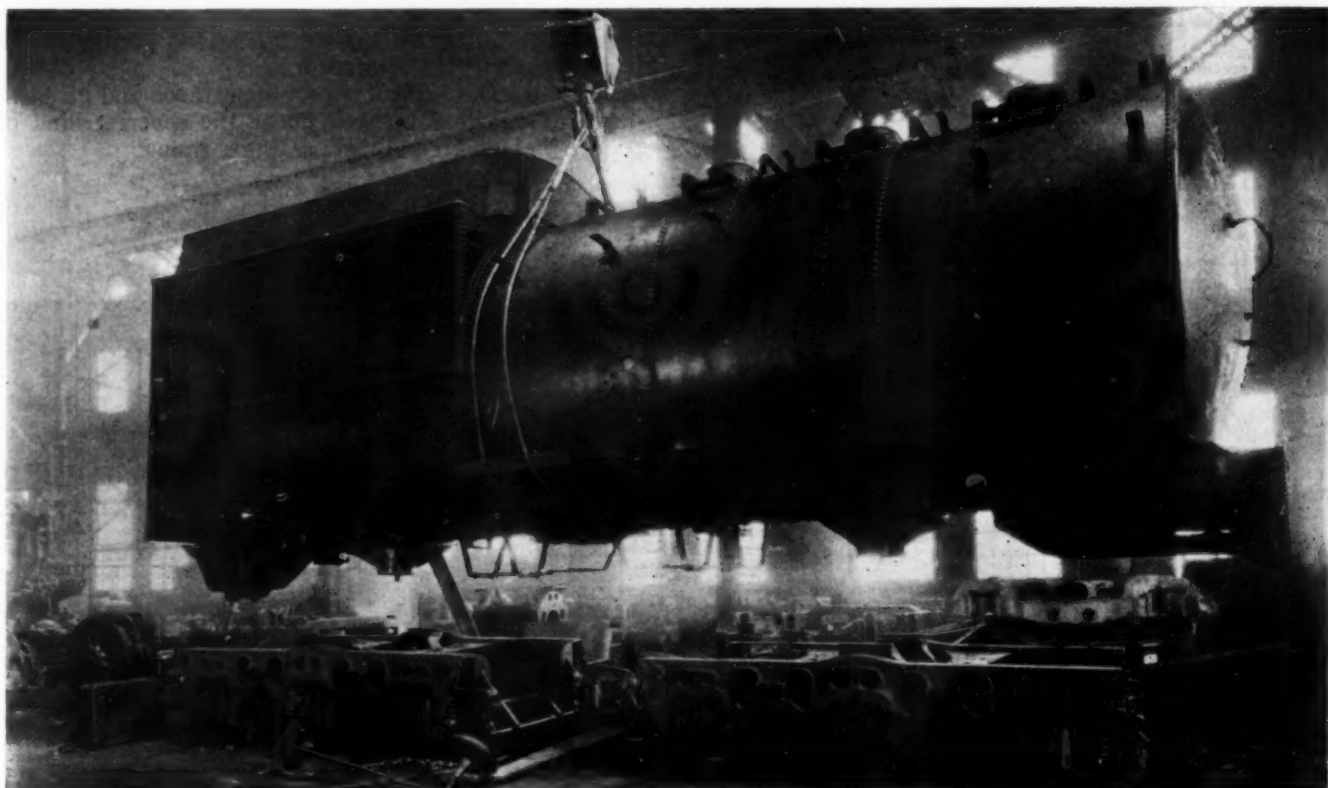
#### Special Equipment

The locomotives are equipped with the Type BK stoker, Elesco feedwater heaters, C. F. pumps, Type E superheaters, American multiple throttles, Precision reverse gear, two Thermic syphons in the firebox, cast steel grates, and the Alco lateral motion device on the front drivers. Other special equipment includes a Hancock inspirator on the right side, an improved type Ashcroft cut-off control gage and air-operated cylinder cocks. The main axles are open hearth hammered steel. The main crank pins, side and main rods and piston rods are of nickel steel. The springs are of carbon steel except in the engine trucks which are Edgewater ring springs.

#### The Tender

The tenders of these locomotives are of the Vanderbilt type, having a capacity of 11,000 Imperial gallons of water and 20 tons of coal, and are of special interest in that they embody some features which, it is believed, are employed for the first time in locomotive practice.

The customary steel underframe has been abandoned and the bottom of the tank is formed from a plate of sufficient thickness, when reinforced by an internal I-beam running longitudinally, not only to take care of the stresses imposed on the structure due to dead weight and coal and water load, but also to transmit all pulling and buffing stresses from the rear coupler to the engine. The front and back draw castings are of steel, designed in suitable saddle form to fit the curved bottom, having bosses and fitting strips machined to the required radius.



Photograph Taken in the Erecting Shop Looking Toward the Rear of the Tender as It Is About to be Lowered Onto the Trucks



The front casting has the usual pockets to receive the drawbar, safety bar and radial buffer. The rear casting forms a housing for the draft rigging and has a bumper beam cast as an integral part of it.

The front plate of the tank carries the Canadian National standard vestibule housing and spring casings. It is extended down and reinforced to form jacking arms and anchor points for the front truck safety chains and to carry the tank valves and the piping connections between the engine and tender, no bumper beam is provided at the front end. Suitable plate brackets extend out from the bottom plate between trucks to anchor the inside safety chains and to carry the equipment box and auxiliary reservoir. The rear safety chains of the back truck are carried from the bumper beam.

**Table of Principal Dimensions, Weights and Proportions of the Canadian National 4-8-4 Type Locomotives**

Railroad	Canadian National
Builder	Montreal Locomotive Works, Ltd.
Type of locomotive	4-8-4
Service	Passenger and fast freight
Cylinders, diameter and stroke	25½ in. by 30 in.
Valve gear, type	Baker-Pilliod four-ring
Valves, piston type, size	14 in.
Maximum travel	9 in.
Outside lap	1½ in.
Exhaust clearance	¾ in.
Lead	¾ in.
Weights in working order:	
On drivers	232,200 lb.
On front truck	66,500 lb.
On trailing truck, front wheels	33,800 lb.
On trailing truck, rear wheels	50,500 lb.
Total engine	383,000 lb.
Total tender	274,600 lb.
Total engine and tender	657,600 lb.
Wheel bases:	
Driving	19 ft. 6 in.
Total engine	43 ft. 10 in.
Total engine and tender	82 ft. 4¾ in.
Wheels, diameter outside tires:	
Driving	73 in.
Front truck	34¾ in.
Trailing truck, front	34¾ in.
Trailing truck, rear	48 in.
Journals, diameter and length:	
Driving, main	12 in. by 13 in.
Driving, others	10 in. by 13 in.
Engine truck	7 in. by 10 in.
Trailing truck, front	7 in. by 12 in.
Trailing truck, rear	9 in. by 14 in.
Boiler:	
Type	Straight top
Steam pressure	250 lb.
Fuel, kind	Soft coal
Diameter, first ring, inside	80¾ in.
Firebox, length and width	126¾ in. by 96¾ in.
Combustion chamber, length	48½ in.
Tubes, number and diameter	42—2¼ in.

Flues, number and diameter	167—3½ in.
Length over tube sheets	21 ft. 6 in.
Grate area	84.4 sq. ft.
Heating surfaces:	
Firebox and combustion chamber	315 sq. ft.
Arch tubes and syphons	117 sq. ft.
Tubes and flues	3,812 sq. ft.
Total evaporative	4,244 sq. ft.
Superheating	1,931 sq. ft.
Combined evap. and superheating	6,175 sq. ft.
Tender:	
Style	Vanderbilt
Water capacity	11,500 gal. (Imperial) 13,800 gal. (U. S.)
Fuel capacity	20 tons
Wheels, diameter outside tires	34¾ in.
Journals, diameter and length	6 in. by 11 in.
Rated maximum tractive force	56,800 lb.
Weight proportions:	
Weight on drivers ÷ total weight engine, per cent.	60.8
Weight on drivers ÷ tractive force	4.08
Total weight engine ÷ combined heat. surface	62
Boiler proportions:	
Tractive force ÷ comb. heat. surface	9.2
Tractive force × diam. drivers ÷ comb. heat. surface	672.5
Firebox heating surface ÷ grate area	5.12
Firebox heating surface, per cent of evap. heat. surface	10.2
Superheat. surface, per cent of evap. heat. surface	45.7

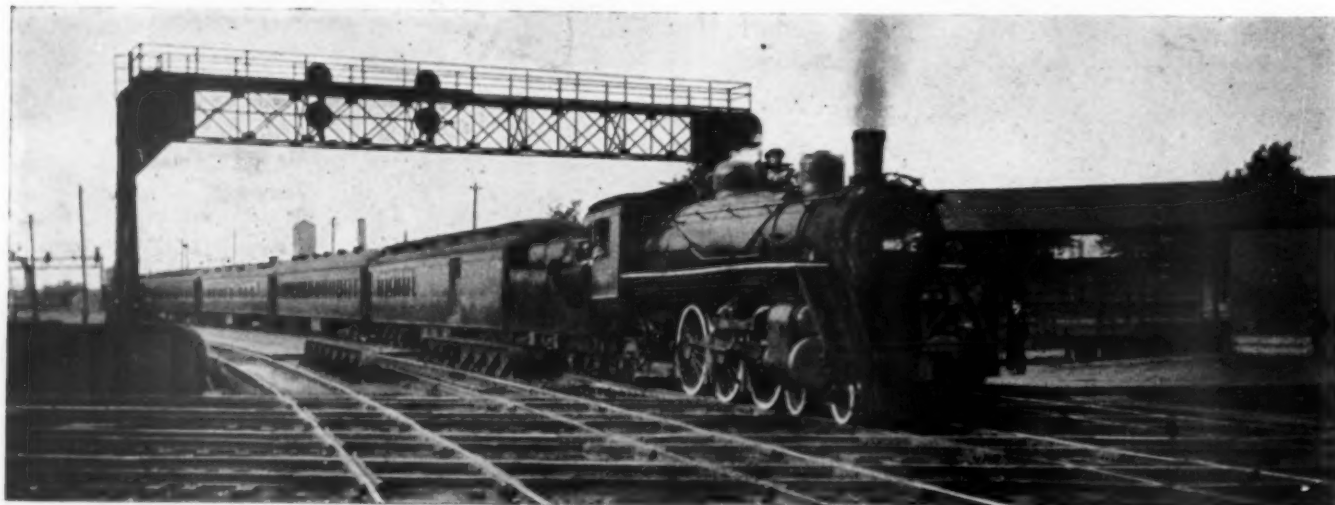
An equipment box of sufficient capacity to house car replacers, jacks, chains, etc., is carried between the trucks on the left side. Ladders and steps are provided at all four corners of the tender. The ladder at the left front corner is hinged to the front plate of the tank to swing clear of the stoker compartment should removal of the stoker engine be necessary at any time. Barco flexible joints are provided between engine and tender for the three air lines on the right side and the steam heat and stoker steam on the left side.

In accordance with Canadian National practice the combined automatic and straight air equipment is provided on tenders, a quick-action triple auxiliary reservoir and double check valve being employed. In this case an 18-in. brake cylinder with a Type L triple valve is applied, the triple valve functioning as an ordinary Type P.

The tanks are carried on two Commonwealth six-wheel trucks, with Canadian National standard 34¾-in. steel tired wheels and 6-in. by 11-in. journals, American Steel Foundries clasp brakes being fitted. A Symington swivel-butt Type D bottom-operated coupler in connection with Miner friction draft gear and Farlow attachments completes the equipment.

These tenders present a neat appearance and give evidence of standing up well under the severest kind of service on both freight and passenger trains.

\* \* \* \*



A Rock Island Suburban Train Crossing the Pennsylvania Tracks at Englewood, Ill.

# Centenary of the Stourbridge Lion

*Granddaughter of Horatio Allen unveils monument at Honesdale, Pa.—Town holds a three-day celebration*

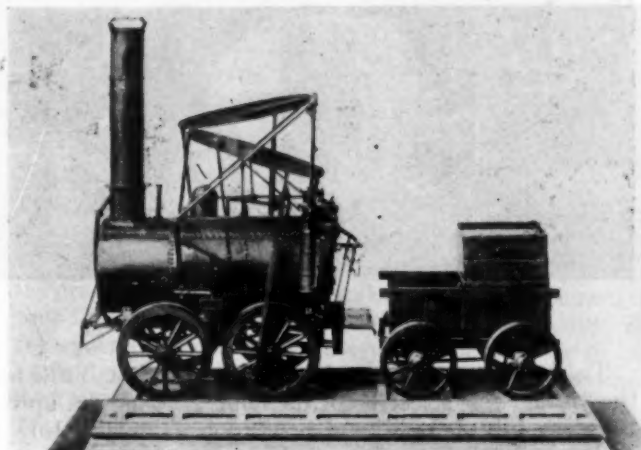
**T**HE people of Honesdale, Pennsylvania, where Horatio Allen, on August 8, 1829, operated the "Stourbridge Lion" over a trial run of about three miles and back, and thus immortalized his name as that of the first locomotive engineer in America, has this month signalized that event by a three-day celebration, participated in by thousands of the citizens of the vicinity and promoted also by the Delaware & Hudson Company.

The chief historical feature of the celebration was the dedication of a monument to mark the event, which was unveiled on Thursday afternoon, August 8, by Mrs. Russell D. Lewis of Orange, N. J., granddaughter of Horatio Allen. An elaborate historical pageant featured the evenings of the three days, Thursday, Friday and Saturday. The pageant was prepared and directed by Rev. William K. Newton, Miss Marie Freund and Miss Jessica Robinson. More than a thousand men, women and children took part in the pageant, the historical features of which included not only local matters but details of the origin of the Delaware & Hudson Canal company, predecessor of the present D. & H.

There was a transportation parade on the first day and a public reception and band concert both Thursday and Friday. Saturday was given up to a firemen's parade. The original locomotive, or as much of it as has been preserved, is now in the museum of the Smithsonian Institution at Washington and the Honesdale celebration had to content itself with a replica. The Delaware & Hudson Company has brought to Honesdale the monster modern locomotive "Horatio Allen" and also the John B. Jervis and another, the three locomotives recently built by the Delaware & Hudson Company embodying numerous striking improvements in locomotive practice. These modern engines have been described in the *Railway Age*, (February 7, 1925, page 353; March 12, 1927, page 893, and July 20, 1929, page 201).



Horatio Allen



The Stourbridge Lion

The monument, an undressed boulder, bears a bronze tablet showing the historic locomotive in relief, below which is the legend reproduced, herewith.

Historical addresses were delivered by L. A. Howell, general chairman of the celebration committee: Hon.

"NEAR THIS SITE  
ON AUGUST 8TH, 1829  
**THE STOURBRIDGE LION**

THE FIRST LOCOMOTIVE  
TO RUN ON RAILS IN AMERICA  
MADE ITS TRIAL TRIP  
ON THE RAILROAD OF  
THE DELAWARE AND HUDSON  
CANAL COMPANY

WITH HORATIO ALLEN  
AS ENGINEER

TO COMMEMORATE THAT HISTORIC EVENT  
THIS MONUMENT WAS ERECTED BY  
THE CITIZENS OF HONESDALE, PENNSYLVANIA  
AUGUST 8TH, 1929"

A. T. Searle; Hon. Samuel E. Shull; Hon. H. A. Mackey, mayor of Philadelphia; and Colonel J. T. Loree, vice-president of the Delaware & Hudson.

The program of the celebration contains a sketch of the history of the Stourbridge Lion, as found in the well-known work of William H. Brown (1877) and the publications of the Delaware & Hudson Company.

Allen, then 26 years of age, resident engineer during the construction of the Delaware & Hudson Canal, was sent to England in January, 1828, to buy rails and to have four locomotives built under his supervision. On July 19, of that year, in a letter to the Board of Managers he stated that he had contracted with Robert Stephenson & Company, Newcastle, for one locomotive and with Foster, Rastrick & Company, Stourbridge, for three. The "Lion" was shipped from Liverpool on April 8, 1829, reaching New York on May 13. The railroad from Honesdale, the canal terminus, up to the coal mines was now nearly completed and the managers were eager to have a locomotive make a trial run.





Monument at Honesdale

The "America" had arrived earlier in New York but the "Lion" was selected for the trial. It was sent up the river on July 2, 1829, and reached Rondout on July 3, and was started up the canal on July 16. Allen was waiting at Honesdale to receive the engine and on August 8, unaided and alone, he drove it three miles, into the woods of Pennsylvania to the site of Seelyville, returning to the starting point by reversing the locomotive.

The line over which this run took place was straight for about 600 ft., and parallel with the canal, and crossed the Lackawaxen creek by means of a trestle 30 ft. high on a curve nearly one-fourth of a mile long having a radius of 750 ft. The track then continued, in nearly a straight line, into the forest. The road was of hemlock stringers 6 in. by 12 in. set on edge, and of 20 ft. and 30 ft. lengths, held together by cross ties at intervals of 10 ft. to 15 ft., supported on posts set in broken stone or on stone piers. The running surface of the rails had wrought iron straps  $2\frac{1}{2}$  in. wide, 15 ft. long, secured to the wooden rails by wood screws.

This construction, with trestles at many points, was found to be inadequate and, very reluctantly, the managers of the company found it necessary to abandon, for a number of years, the use of locomotives upon this railroad. After a second trial the "Lion" was removed from the rails and stored alongside the track, where it remained housed until about 1849. It was then taken to Carbondale where the boiler was put into use in the company's shop, and many of the other parts also worked up for use. On June 18, 1889, Lindsay & Early, of Carbondale, Pa., came into possession of it, and that firm deposited it in the Smithsonian Institution at Washington. A number of the other parts of the engine have also been deposited there.

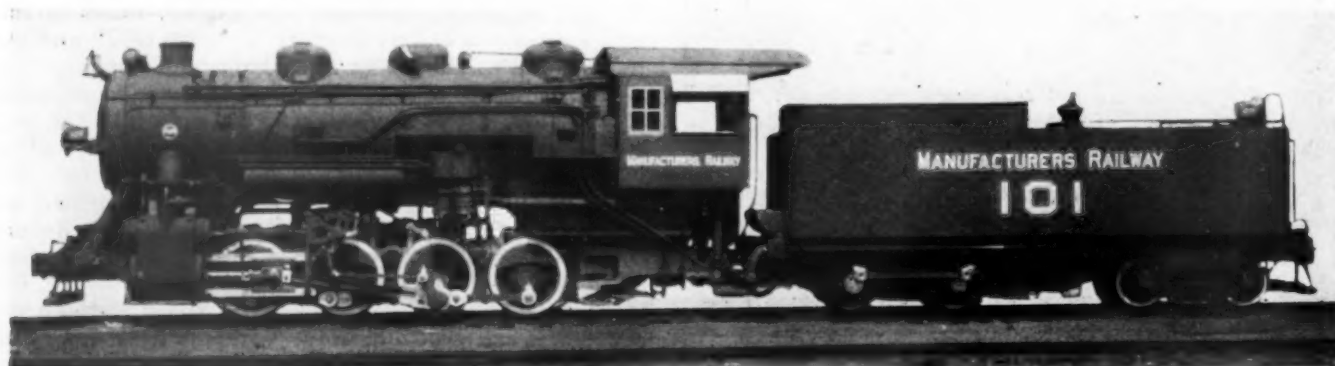
## Manufacturers Railway Eight-Wheel Switchers

THE Baldwin Locomotive Works recently delivered two eight-wheel switching locomotives to the Manufacturers Railway, St. Louis, Mo., to be used in freight-transfer service over the Municipal Bridge between St. Louis and East St. Louis, Ill. These locomotives have a rated maximum tractive force of 58,300 lb. and operate with a boiler pressure of 200 lb. The cylinders are 25 in. by 28 in. and the driving wheels are 51 in. in diameter. The new 0-8-0 type switchers are constructed to operate over maximum curves of 25 deg. on two per cent grades.

These locomotives are equipped with Type A superheaters, Alco power reverse gears, Gregory smoke suppressor, and Hulson grates. The front of the tender is carried on a Franklin reversible tender booster, estimated to develop 13,700 lb. tractive force. Both the engine and tender are finished in black Duco. The principal dimensions, weights and proportions of these locomotives are given in the table.

Table of Dimensions, Weights and Proportions of the  
Eight-Wheel Switchers Built for the Manufacturers  
Railway (St. Louis, Mo.)

Railroad .....	Manufacturers Ry. (St. Louis, Mo.)
Builder .....	Baldwin
Type of locomotive .....	0-8-0
Service .....	Switching
Cylinders, diameter and stroke .....	25 in. b.; 28 in.
Valve gear, type .....	Walschaert
Valves, piston type, size .....	12 in.
Weights in working order:	
On drivers .....	233,210 lb.
Total engine and tender .....	410,300 lb.
Diameter driving wheels outside tires .....	51 in.
Wheel bases:	
Driving .....	15 ft.
Total engine and tender .....	55 ft. 1 3/4 in.
Boiler:	
Type .....	Straight top
Steam pressure .....	200 lb.
Fuel .....	Bit. coal
Diameter first ring, inside .....	80 in.
Firebox, length and width .....	102 1/4 in. by 66 1/4 in.
Tubes, number and diameter .....	224—2 in.
Flues, number and diameter .....	36—5 1/2 in.
Length over tube sheets .....	14 ft. 6 in.
Grate area .....	47 sq. ft.
Heating surfaces:	
Firebox and arch tubes .....	220 sq. ft.
Tubes and flues .....	2,438 sq. ft.
Total evaporative .....	2,658 sq. ft.
Superheating .....	583 sq. ft.
Combined evaporative and superheat .....	3,241 sq. ft.
Tender:	
Water capacity .....	9,000 gal.
Fuel capacity .....	10 tons
General data, estimated:	
Rated tractive force .....	58,300 lb.
Tractive force of booster .....	13,700 lb.
Combined tractive force, locomotive and booster .....	72,000 lb.
Weight proportions:	
Weight on drivers ÷ tractive force .....	4.02
Total weight engine ÷ comb. heat. surface .....	71.8
Boiler proportions:	
Tractive force ÷ comb. heat. surface .....	17.95
Tractive force × diam. drivers ÷ comb. heat. surface .....	916
Firebox heating surface ÷ grate area .....	4.68
Firebox heating surface, per cent of evap. heat. surface .....	8.3



Eight-Wheel Switcher Built by the Baldwin Locomotive Works for the Manufacturers Railway, St. Louis, Mo.



# Making the Most of Freight Cars\*

*The possibility of increasing efficiency through  
the study of operating methods*

By R. N. Begien

Vice-President, Chesapeake & Ohio

IT is obvious that the number of loaded car miles required to handle a given tonnage from point of origin to destination depends very little upon the miles per car per day or the net ton-miles per car day, but if too many cars are used the result will be a low mileage per car per day; and conversely a lesser number of cars engaged in handling the same business means a greater number of miles per car per day. A careful study of almost any railroad situation will demonstrate that the most economical operation requires a high mileage per car day—not necessarily the maximum mileage per car day but at least a relatively high mileage.

do this it is necessary to have an adequate system of telegraphic reports which will show the movement of cars from various terminals and other points daily, and for shorter periods if necessary and the number of cars awaiting movement, properly classified as to loads, empties, types of cars and otherwise as may be required. The transportation office should also have before it each day statements showing approximately where the loaded and empty cars are, and their availability for the service for which they are required.

The percentage of cars moved and the percentage awaiting movement each day will give an immediate in-



The C. & O. Yards and Shops at Clifton Forge, Va.

It is important to recognize that car miles per car day are always at a maximum when the total car miles necessary to move a given business are made with the smallest possible number of cars, and that this involves the least practicable amount of interruption to the movement. It is essential, therefore, that the car location be controlled and that it can be determined currently whether or not business is being moved promptly. To

dication of whether the movement is satisfactory, or the reverse. It is considered that a satisfactory transportation situation is maintained when the percentage of cars awaiting movement is around 15 per cent or lower. This figure will indicate that, on the average, cars stand in each yard an average of  $3\frac{1}{2}$  to 4 hours. In addition to this check of the movement, it is advantageous to have special studies of important yards made from time to time to determine both the average delay to cars in these yards, and if the cars used in any particular movement are more seriously delayed, the reasons therefore.

\* From a paper presented before the Transportation Division, American Railway Association, at Chicago, May 29. The paper was read by G. D. Brooke, general manager, Chesapeake & Ohio, in Mr. Begien's absence.

In order to pass cars through terminals as quickly as possible, it is important that all duplicate switching be avoided. To accomplish this a general plan of classification applicable to the entire railroad has been found advantageous. This assigns to each yard the work which it can perform to the greatest advantage and has for its principal idea the making up of trains to travel as far as practicable without being subject to classification in intermediate yards. It has been found that in this manner approximately 30 per cent of the trains can be passed through division terminals with no work other than that of inspection and switching out bad order cars.

#### Reports Are Essential

In order to study operating conditions and improve operating methods it is necessary to have reports which are readily analyzed and afford convenient comparisons with every one of the multitude of operations which go to make up a railroad. Many of these reports should be made daily, the others weekly, or at other suitable intervals, and all should be received promptly by those interested. The units of performance which these reports contain will go up and down from day to day and the reports should indicate, as far as possible, the reasons for these variations. Experience has shown that one of the best methods of maintaining the interest of the operating organization in the movement of cars is to keep interested officers and employees well informed as to what they are doing from day to day.

As an abstract proposition, economy is promoted by conducting the operations of a railroad with the least possible number of units of equipment. The same car supply may be maintained by running 40,000 cars at the rate of 20 miles, or 20,000 cars at the rate of 40 miles per day, but a much larger plant is needed to handle the business with 40,000 cars than with 20,000 cars. Merely to hold the additional cars, 160 miles of trackage is required.

The additional 20,000 cars alone would represent an added investment of around forty million dollars. More locomotives are required to handle the cars as well as additional running tracks, yards and repair shops, to say nothing of additional man power and organization.

#### Heavier Loading

Next to a good car movement comes the heavy loading of cars as an important factor in the efficient utilization of equipment. The securing of the maximum average carload is important from the standpoint of efficient operation. It is a matter of supervision, study of loading possibilities and methods, and, for carload business, the obtaining of the co-operation of the shippers. Business which moves in large volume and is comparatively heavy is an excellent subject upon which to concentrate efforts toward heavy loading, and satisfactory results have been obtained through a well planned, continuous campaign to increase the loading of coal cars, for example.

#### Traffic Fluctuation

One of the greatest problems which has to be met in car utilization is the fluctuation in traffic. If business moved more uniformly, so that a volume equal to that of the daily average was offered each day, it would be possible to set up schedules, regulate the movement of power and crews and thereby produce great economy, but the business loaded on line and received from connections is subject to fluctuations from day to day and from month to month, due to Sundays and holidays, to seasonal variations, and changing business conditions.

In meeting these varying conditions and producing withal economical operation, it will generally be found that it pays not to put off until tomorrow anything that can be done today. Tomorrow is a long way in the future in railroad transportation. Today may be sunshiny and warm, with ideal conditions for moving business; tomorrow may be cold and stormy, making operating conditions difficult and necessitating sharp reductions in ratings in order to move freight trains at all satisfactorily. Accidents or other obstructions may occur, making it impossible to take full advantage of the day for handling business. Particularly disastrous has been the practice of holding power at one end of the line, when it was badly needed at the other end of the line to avoid congestion.

#### Manifest Trains

Manifest trains rarely secure the train load which is possible with heavy loads, such as coal. Additional speed, however, made possible by the preference given the movement of manifest freight, is translated into low cost. It might be concluded, unless the matter was given careful thought, that this would indicate the desirability of handling all freight as fast freight. It should, however, be realized that the fast time made by manifest freight is because of the preference given the movement and if all trains were handled as manifest freight there could be no preference.

It should not be overlooked that when heavy train loads are moved at practicable freight train speeds, economical results are obtained and as the train load or the speed or both are increased, the cost will go down, and when the reverse is true, the cost will go up. It will also be found that where the cost of handling manifest freight is less than that of the slow freight, it is usually on single-track lines, where the volume of slow freight is relatively low as compared with the volume of manifest freight. Such conditions, of course, make it quite difficult for slow freight trains to handle full tonnage rating, and at the same time subject them to frequent interference and delays in clearing for the manifest trains, which results in slow average speed.

Building up the train load involves careful supervision by the division officers, so as to avoid as far as practicable the running of light or partly loaded trains in the direction of the prevailing movement and, where it is necessary to run light power at all, to restrict this to the absolute minimum.

#### Improvements Necessary

Capital expenditures which provide needed running tracks and yard room, so that business can be handled promptly, generally yield a return even greater than is contemplated. Reductions of grades, which result in increasing train load, are much more valuable if the increased train load can be handled without loss of speed. Then, too, loss of speed may easily result from the failure to provide additional running tracks. Improvements are necessary not only to handle increased business and to promote operating efficiency, but to modernize the plant.

Operating costs on most of the railroads have been coming down steadily for a number of years and there is no doubt but that physical improvements have contributed their share to these economies, but it is equally true that railroad operation is more scientific than ever before, and that better methods of operation, of transportation, of maintenance, of both track and equipment, have been very effective and have produced generally excellent results in situations where improvements through capital expenditures have been few or entirely



nil, as well as in those where extensive additions and betterments have been made. It is, therefore, important that each problem have careful study and consideration to determine if its solution may not lie in improved methods or practices, by which the fullest advantage may be taken of the existing facilities, rather than in betterments requiring capital expenditures.

In order to secure the best results, it is essential that important details of train and yard operation, such as train dispatching methods, the blocking and scheduling of trains, the starting of tonnage freights so as to meet with minimum interference, the elimination of the causes of stopping and delaying trains, and the initial and final terminal time of trains, be subjected to careful, systematic study and checking. Inspection in detail by an officer well experienced in operation will usually disclose those parts of the railroad which are limiting factors in the handling of business and the practicability of meeting the difficulties by changes in operating methods or the necessity of resorting to improvements in the facilities. Just as the making of high average car mileage depends on keeping the cars moving a reasonable part of the 24 hours, so too in train operation it is far more important to eliminate stops and delays than to depend upon high speed.

One prolific source of revenue train stops is the operation of work trains. This interference may not only be largely avoided, but the number of work trains may be reduced by careful planning of the work in advance. It is remarkable to what extent any particular feature of railroad operation will yield to careful planning and systematic effort.

Improved operating conditions on a railroad mean a great deal to the officers and employees, and a fine esprit de corps in a railroad organization is a potent element in successful operation. Men are usually proud of their railroad if they can be, and their morale goes up or down with the general prosperity of the road, and since prosperity is brought about by operating efficiency, the officers and employees are always proud and pleased when good work is being done. It is the practice on some railroads to seek the co-operation of their employees as one means of increasing their happiness and at the same time bringing about better operating efficiency.

The education of employees for advancement is secondary only to the proper selection of new employees. Just how far a railroad should go in the education of its employees is open to question, but it is quite certain that it is for the benefit of all concerned to encourage self-education among officers and employees. It is essential that they should continue their education throughout the entire term of their railroad experience.

## Bird-Archer Type B Sludge Remover

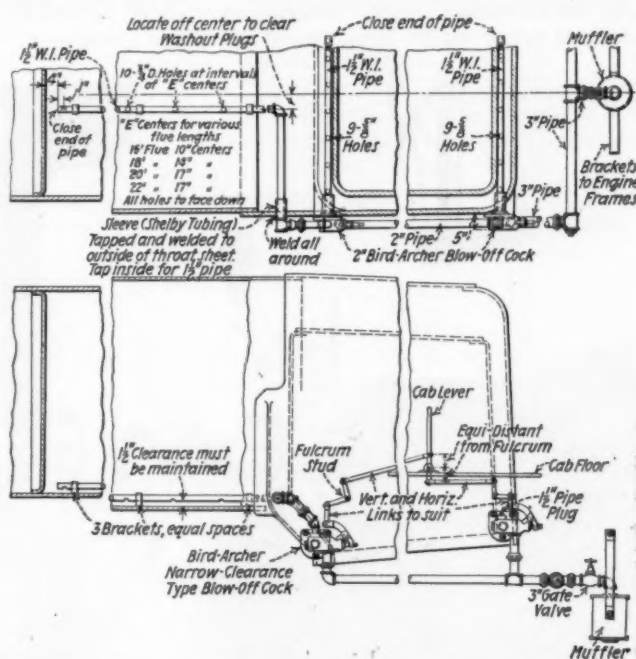
**F**OR successful pre-steaming locomotives entering terminals equipped for pre-steaming should have a standard arrangement for a quickly and easily handled pre-steaming connection to the steam-pipe system of the terminal.

Locomotives operating in districts requiring water treatment require efficient blow-off equipment, whether the treatment is external or internal. A severe foaming tendency is usually met with, because of some delayed reaction precipitating solids in the boilers and because of excessive alkalinity. Where treatment is internal, all of

the solids of the water are deposited within the boilers and must be ejected.

To meet these conditions the Bird-Archer Company, 122 South Michigan avenue, Chicago, has redesigned its sludge remover, as shown in the illustration. The type B sludge remover is not only designed to remove effectively practically all precipitated solid matter from the boilers, but it also furnishes a quick and convenient means of connecting with pre-steaming plants and to the enginehouse blow-down and fill-up lines. In addition, it furnishes internal washout nozzles to facilitate the washing of boilers once a month as required by the I. C. C. The device contains three separate boiler openings, controlled by one lever, with internal piping reaching throughout the length of the bottom of the barrel of the boiler and to both the front and back legs of the firebox.

Operated on the road, this equipment blows through a muffler, but when used in the terminals as a pre-steaming connection or in the enginehouse as a connection to



General Arrangement of the Bird-Archer Type B Sludge Remover

modern boiler-washing plants, the muffler is shut off and one connection only is made on the most convenient side of the engine, thus making use of all three boiler openings.

For years a blow-off cock of about 1 1/2 in. diameter of full opening has been used for locomotives of all sizes. The Bird-Archer sludge remover corrects this inconsistency by providing three 1 1/2 in. openings, giving approximately five times the area for the function required.

Another feature of this new sludge-removing device is that it provides blow-off cocks with only 5 1/2 in. of horizontal extension from the firebox side sheet. Since practically all locomotives recently designed require the last available inch in side clearance, the blow-off cock may be a limiting feature and the usual measurement is over 11 1/2 in. On this basis the device allows 12 in. increased width of grate area.

In operating a sludge-removing equipment satisfactorily, it is necessary that all openings be simultaneous. If the blow-off cocks could be operated individually, the purpose as well as the efficiency of the device would be defective. This is the reason for the combined lever connections shown in the drawing.



# Missouri Pacific Operates Budget for Inventories

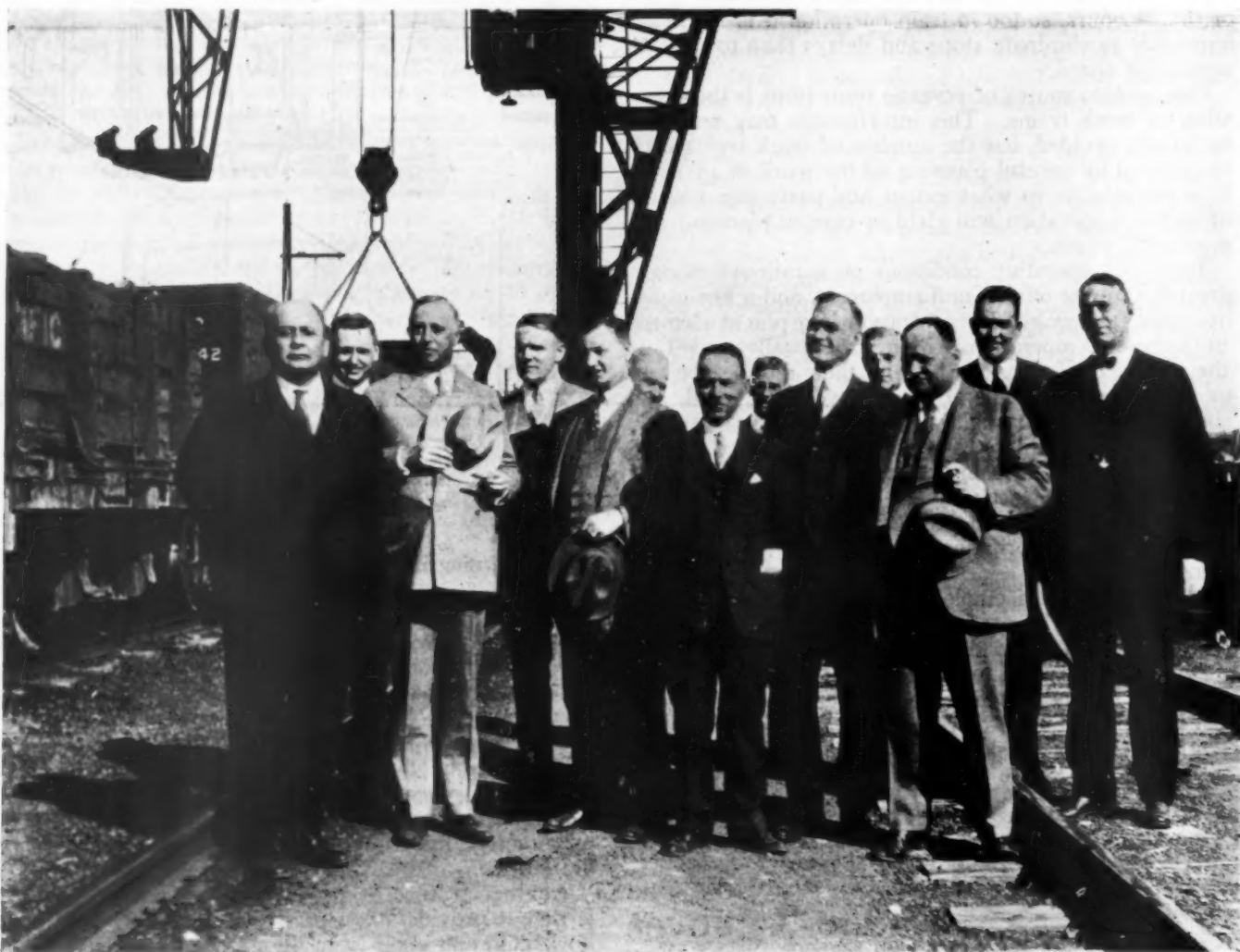
*Principle behind plan held sound—Proves aid in controlling unapplied material*

By L. P. Krampf

Supply Agent, Missouri Pacific

THE control of material and supply stocks offers a broad field for discussion and study, and is one in which railway executives and entire supply department organizations are vitally concerned. Almost every supply department operation comes within

leadership in any plan which has for its fundamental purpose the conservation of investments in material stocks. There are many factors upon which effective control is largely dependent, some of which may be summed up as follows:



System Officers Inspecting Missouri Pacific Stores—L. P. Krampf Third from Right—President L. W. Baldwin on Extreme Left

its scope and is connected either directly or indirectly with this subject.

Control, to be thoroughly effective, must be vested in the supply department, closely co-ordinated with the using departments. The supply department is essentially a department of service. It has assumed the leadership in the care, the ordering and the disbursement of materials, and, likewise, should assume the

Adequate facilities for the storage of materials.

Correct and uniform stock book records.

The systematic patrolling of line stocks to prevent accumulation of surplus.

The elimination of so-called emergency stocks.

The proper disposition of surplus and inactive materials.

Standardization of stores stocks.

It has been generally recognized that the carrying cost of materials is approximately 18 per cent; there-

fore, any plan, whether called budget control, allotment for purchases or any other name, which has for its purpose the conservation of investments in material stocks, ought to be encouraged. The budget plan, or allotment for purchases, has received considerable unfavorable publicity. This is largely due to a misunderstanding among some supply department officers, who appear to be under the impression that the intent of the plan is to displace the stockbooks, as a basis of ordering. This is entirely erroneous, as the most ardent advocates of the allotment plan recognize that the basic principles for control are co-ordination with the users of material and conservative ordering; and, moreover, that units must continue to be the basis of ordering, as reflected by the stockbook records. The intent of the allotment plan, based on past experience, expressed in money values, is to serve as an additional agency to minimize the possibility of accumulating an excess quantity of material units.

#### A Daily Record Kept

On the Missouri Pacific, we believe that we have made considerable progress with this plan. We have adopted, and are maintaining without any additional expense, a daily record of material purchases in the form of a consolidated chart, as shown by the accompanying illustration. We have found this an aid to the stock books in controlling material and supply



A Missouri Pacific Stores Operation

stocks. The chart applies to material for maintenance requirements only, although the amount of purchases for program materials is posted as a matter of record. In computing the allotment figures of each class of material, consideration is, of course, given to seasonal

Daily Record—Material Purchases—January, 1929

Description	Classes	Average Monthly Purchases	On Hand Dec. 31, 1928	Average Per Cent of Issue	Allotment	2	3	Days of Month				30	31
Track fastenings .....	1-A&B												
Track tools .....	1-C												
Motor and hand-car parts .....	1-D												
Signal material .....	2-A												
Telephone material .....	2-B												
Cement—reinf. rods, etc. ....	3												
Water service material .....	9-A												
Coal chute and crane material .....	9-C												
Bolts—nuts—washers .....	11												
Springs .....	12												
Flues and superheater material .....	13												
Metal supplies .....	14												
Bar iron .....	15												
Billets .....	15-A												
Sheet steel .....	16												
Locomotive forgings .....	17												
Car forgings .....	18												
Gray iron—steel & malleable castings.....	19												
Cylinders—wheel centers, etc. ....	19-A												
Car specialties .....	20												
Brass castings .....	21												
Air brake material .....	22												
Locomotive appliances .....	23												
Passenger car material .....	24												
Electrical material—locomotive .....	25-B												
Electrical material—passenger cars .....	25-C												
Other electrical material .....	25-E												
Passenger motor car material .....	26												
Fire brick and clay .....	28												
Wheels—tires—axles .....	29												
Locomotive and car lumber .....	30												
Boilers—fire boxes—frames .....	32												
Train supplies .....	36												
Oil—grease and waste .....	37												
Pipe and fittings .....	42												
Hardware .....	45-A												
Small tools .....	45-B												
Packing .....	46												
Paint and glass .....	47												
Sub total .....													
Miscellaneous special items .....													
Program car material .....													
Program bridge material .....													
Fuel for locomotives and shops.....													
Total .....													

NOTE: Amount of purchase to be posted daily in accumulated totals—Cents omitted.

requirements, shop schedules and the stock balance. The amount of purchases in money values is posted daily, opposite each class, in accumulated totals.

It is the practice on some railroads to withhold or defer the placing of a part of the requisitions held in the office of the general storekeeper. The chart will give a general idea of the classes of material that may be temporarily withheld from purchases. The posting of the daily purchases in accumulated totals will sometime



A Missouri Pacific Store

develop that the total purchases to date for a certain class have exceeded the average normal monthly purchases, and the chart offers an opportunity to investigate the reasons therefor. Such an investigation may develop that the stock requisitions have been submitted in excessive quantities, and in such cases the chart offers an opportunity to correct this condition before the requisitions have been placed for purchase. This may not be done if dependence is placed entirely upon units as a basis of ordering and without regard to money values.

#### Must Know Money Value

We need all the information that can be made available to prevent unnecessary carrying costs, and we have found the chart, as described, to be a simplified, workable plan which brings to the attention of all concerned, in a consolidated form, the amount of materials to be purchased, expressed in money values, as well as units. When these figures are considered with reference to the average normal monthly purchases and the average per cent of turnover, it has been our experience that such a plan is helpful in the control of material stocks.

THE ST. LOUIS-SAN FRANCISCO, during July, operated 5,027 passenger trains with an on-time record of 97.5 per cent. The Western division, in Oklahoma and Kansas, operated 186 trains with 98.9 per cent on time.

IN CONNECTION WITH THE CELEBRATION of the one hundredth birthday of John R. Voorhis, president of the Board of Elections of New York City, who is still in active service, attention has been called to the fact that a single life time, that of Mr. Voorhis, covers the whole of the railroad epoch in America, to date.

## Making Dollars from Dross

**B**Y CONCENTRATION and efficient supervision of records in the general offices at St. Louis, the St. Louis-San Francisco was able to release 5,927 sq. ft. of office space, between 1923 and 1927, with a total saving in rental of \$10,253. This amount of space has not been increased since, and, under the rental rate begun in 1927, the saving at the end of a nine-year period will be \$102,537.

In 1928, 11,910 standard file boxes were salvaged and put back into use. These boxes cost 25 cents, so that the saving amounted to \$2,977. Other containers, such as ticket boxes, tabulating machine boxes, script and mileage boxes, amounting in all to 3,311 units, were also salvaged, at a saving of \$1,262.

During 1928, 1,265,629 lb. of waste paper was sold, bringing gross revenue of \$10,147. Of this, the system record room at Springfield produced 258,274 lb., the St. Louis record room and building 376,355 lb., and waste paper concentrated at the Springfield reclamation plant from various points along the line, 631,000 lb.

These and many other economies were brought about by placing all records in charge of a supervisor of records, who has concentrated and re-arranged the record storage space with remarkable effect.

A few years ago, the records of the general offices of the Frisco at Springfield were stored in 13 different buildings. This not only made the search for old files difficult, but used up more space than was necessary. The superintendent of records had a building, formerly used for banana-handling, converted into a record room, where all general and divisional office records are now stored. This consolidated record room released a large amount of valuable office space, and now makes the finding of an old file a simple matter.

In the concentration of records, desks, filing cabinets, chairs and all kinds of office equipment were released. As much of this equipment as possible was repaired and repainted and placed in the store stock. The result is that, except for new offices created and new stations opened, it has not been necessary for the Frisco to buy any new furniture in the last five years as the reclaimed furniture has been ample to supply the entire demand.

The rent in the St. Louis office building is, of course, high. Much of this valuable space was previously given over to the storage of records. The supervisor of records discovered that, in the Tower Grove station, in the inbound freight station at St. Louis and in the attic of the general office building, there was a large amount of storage space available. All these places are as readily accessible to those needing the records. Accordingly, records which had previously occupied 5,927 sq. ft. of office space, were transferred to the storage rooms, with savings as shown in the first paragraph.

The binding of records, for more efficient filing and to conserve space, is carried out on a large scale. A binding machine was installed in each central record room and in 1928, 10,554 books were bound in St. Louis and 3,405 in Springfield.

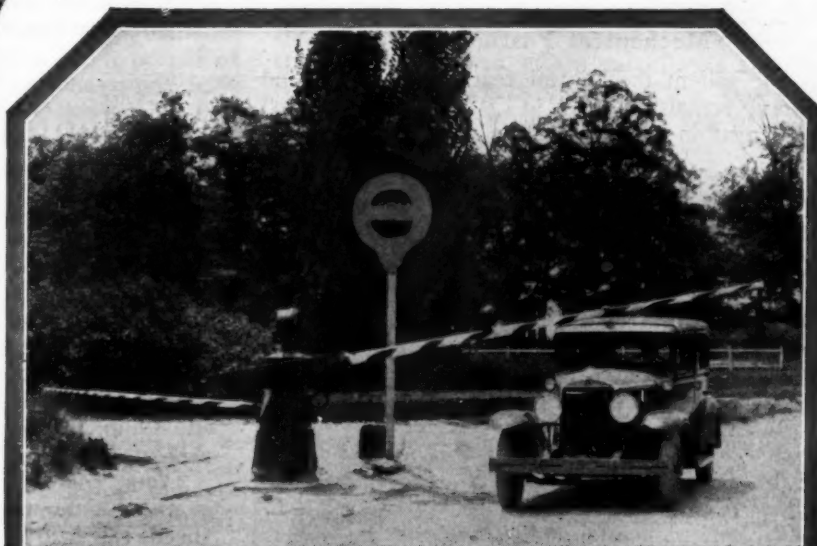
In order that space may be conserved in each office, the supervisor of records is in charge of all moving. A few months ago, the claims division of the law department was transferred from St. Louis to Springfield. The ten employees of this division left the office in St. Louis at 1 p.m. on a Saturday and reported for work at the usual time, the following Monday morning, at Springfield, 240 miles away, where they found their desks, filing cabinets and other office equipment installed in the new office ready for immediate use.



# North Shore Line Installs Automatic Highway Crossing Gates



*Tubular Aluminum-Alloy Arms Are Used*



*Gate Arm Has Descended on Top of Car Without Damaging It*

*Improved pedestals with sidewalk arms will enable road to make substantial saving in crossing protection*

THE Chicago, North Shore & Milwaukee has recently completed an installation of automatic highway crossing gates operated electrically and controlled by track circuits. This installation, located at "North Gate" crossing at Ft. Sheridan, Ill., is the first of a series of such installations to be made on this road. Two gates, one equipped with a 20-ft. aluminum-alloy arm and the other with a 15-ft. arm of similar construction, are used at this crossing. These gates are manufactured by the Standard Automatic Signal Corporation, Chicago.

## Gate Operation

This crossing is on the shore line route of the North Shore and the rail traffic approximates 160 trains a day. A highway parallels the electric railroad on the east and the Chicago & North Western tracks parallel it about 200 ft. to the west. The approach to the crossing from the east is flared out to permit of making an easy left or right turn off the highway. This accounts for the use of a 20-ft. arm at the east side of the crossing. Contrary to usual practices the gate pedestals are both located on the south side of the highway, rather than diagonally across from each other on the right-hand side of the highway in each case. A black and white striping on the tubular aluminum-alloy arm serves to draw attention to them, and their conspicuousness is enhanced by two flashing lights mounted on the arms. The sidewalk arms are four feet long and have no lights.

In brief, the operating cycle of these automatic gates

is as follows: When a train is about 2,400 ft. from the crossing, the warning bell starts to operate and the gate arm lights flash in unison with the bell. Seven seconds later, the gate arms start to move down and they complete their movement in 14 sec.; or 21 sec. after the beginning of the audible and visual warning. Then the gates remain down until the train reaches the crossing, which is not until 20 to 30 sec. later. After clearing the crossing, the gates are operated to the clear position, the time consumed going up being 14 sec., although the arms reach such an angle as to clear the highway traffic in about 6 sec. The flashing lights operate continuously until the arms reach their extreme clear position (about 70 deg. from horizontal).

If a second train should approach the crossing on the other track, before the first train has cleared the crossing, the gates remain down. In fact, if the gate arms should start up, they immediately reverse their movement, when another train enters the control limits. This desirable operating feature provides additional assurance against drivers on the highway running upon the crossing, after the first train has cleared, but when a second train is approaching.

Owing to the balanced construction of the gate arm, no damage can occur to an automobile, if the arm should fall on top of it. This was effectively demonstrated at the time photographs were made for illustrating this article. Also the gate pedestal is so designed that a liberal horizontal displacement of the gate arm can be made without injury to the arm or mechanism. However, if

an auto should run into the arm at high speed, it is very likely that the impact stresses would bend the arm out of shape, although the horizontal flexibility allows for a displacement of 90 deg. from normal position, either forward or backward. This is enough to permit a driver to get off of the crossing if he should fail to heed the warning of the descending gate arm on the other side. Also, this flexibility prevents damage to the arm, if a driver should misjudge his braking distance and hit the arm at slow speed.

#### Mechanical Features

Briefly the salient mechanical features of the Standard automatic signal-gate are: (1) Means for supporting the gate arm on a movable pivot so that the center of



Base of Pedestal Contains the 1/4-Hp. Motor and Silent Chain Drive

gravity may be shifted relative to the point of support in order to raise and lower the arm; (2) a power source and transmission means for shifting the center of gravity; (3) electrical switching means for controlling the motor circuits and; (4) a sturdy post mounting, pivoted about a vertical axis to permit horizontal movement of the gate arm if it should be hit by an approaching automobile or truck. The only driving force acting on the gate arm is gravity. This method of operation eliminates any hazard to vehicles or pedestrians who might be under the arm when it is lowered.

Power for operating the mechanism is provided by a 1/2-hp. Westinghouse single-phase, 220-volt motor with its field connections so arranged as to permit of quick reversal of the motor. This motor is connected by a silent chain drive to a sprocket wheel on the worm gear shaft at the base of the mechanism. All electrical "switching"

is accomplished by means of Mercoid contactors actuated by cam and toggle mechanisms. The control relays, power switch, meter, etc., are housed in a separate instrument case. Nothing but standard signaling practice in control circuits is followed because it is believed that the gates can be no more reliable than the control apparatus.

Manual control of the gates is provided for by means of two dial switches located in a sheet metal cabinet at the side of the relay case. When either switch is turned, the gates are lowered to the stop position.

## Accident Investigations, January

**B**ELOW will be found abstracts of reports made to the Interstate Commerce Commission by W. P. Borland, director of the Bureau of Safety, on 15 train accidents which occurred in the month of January, 1929; eleven collisions and four derailments.

The collision at Short Lane, Md., on January 17 was reported in a report dated February 2 and this report was noticed in the *Railway Age* of March 9 page 572.

The collision with a highway motor coach at Bellevue, Ohio, January 22, 1929, was noticed in the *Railway Age* of May 25, Motor Transport Section, page 1263.

*Elgin, Joliet & Eastern*, Matteson, Ill., January 1, 6 a. m.—Eastbound freight train No. 40, moving at low speed, ran into the rear of a preceding freight, wrecking the caboose and doing other damage and causing the death of the conductor of the leading train, which was moving very slowly. The engineman of No. 40 is held at fault for not observing and obeying block signal No. 944, and the leading train was not properly protected, which was the fault of the conductor (who was killed). The flagman of the leading train had gone forward, in connection with some switching work that had to be done. There was a blinding snow storm at the time and the engineman of No. 40 is held particularly blameworthy for not running more slowly.

*Baltimore & Ohio*, East St. Louis, Ill., January 6, 7:15 p. m.—Eastbound freight train No. 90, which had wrongfully passed HN cabin because of failure of the operator at that point to deliver an order, collided with a westbound freight, overturning both locomotives and doing much other damage. The enginemen of both trains and the head brakeman of the westbound train were killed, as was also one trespasser; and three employees were injured. The manual block system is in force on this part of the road and the operator at HN (which is at Mounds yard) not only had forgotten to deliver the order which should have held the eastbound train but also had cleared the block signal to permit this train to pass without first having secured permission from Caseyville, the next station east. He had delivered three orders to No. 90 but forgot the 31 order which was vital. This order required the train to wait at HN until 7:30; and it appears that when this order was received, about 6:30, he assumed that the train would be so late that the order would not be needed and on this assumption he hung it on a hook and forgot it. It appears to have been the practice, in cases where a wait order was likely to be found unnecessary, to lay the order aside and have it annulled at some time later. The operator's explanation of his failure to get a clear block for No. 90 was his anxiety to avoid detention of the train on an up-grade which might result in delaying the westbound train also. The operator at Caseyville said he had received from HN a clear block for the westbound train, but HN said that he did not remember



having given it. There is a special rule on the timetable (referring to the delivery of "middle orders") which requires that orders be delivered even though the time of a wait order has elapsed, unless the dispatcher has definitely annulled the order which is addressed to the operator. This rule would naturally apply to cases like the present one. The inspector says that violations of a rule of this character can be discovered by any subsequent checking of the records, and he cannot understand why the officers of the road have allowed themselves to be ignorant of the existing conditions; the existence of the irregular practice for a period of several years indicates that the officers have not fully discharged their duty. Attention is called to the fact that this same fault was emphasized by the Bureau of Safety in its report on an accident near Granite, Colo., on August 20, 1925.

*St. Louis, Brownsville & Mexico*, Ricardo, Tex., January 7, 12:35 a. m.—Northbound passenger train No. 14, moving at about 30 miles an hour, was derailed by a broken rail, and the locomotive was overturned. The engineman was killed and two persons were injured. The engineer-physicist of the commission examined the broken rail and found the trouble due to a transverse fissure, and he makes an extended report on his studies of the rail. From the testimony of a brakeman on a preceding train, No. 16, he believes that No. 16 broke the rail, and that the breaking of the rail into a number of pieces was caused by the derailed wheels. He found altogether six transverse fissures. The rail was of Bessemer steel and it had been in service 22 years. A shattered zone or core was found in the head of the rail, a condition which is believed to have existed when the rail came from the mill. In summarizing his conclusions, the engineer-physicist says:

"Transverse fissures are developed as a result of cooling strains acquired at the time of fabrication, and strains set up by the cold rolling action of wheels. In the present case there was a shattered state of the metal in the central core of the head of the rail, the transverse fissures having their nuclei at one edge of this shattered zone. The cooling strains were relieved when the metal yielded by the formation of cracks, but the important question is whether the relief of one of the two strains is beneficial as a whole, or whether the formation of shattering cracks is a disadvantage offsetting the elimination of one of the components, the cooling strains, which have a tendency to result in these fissures. \* \* \*

*Pennsylvania*, Frankford Junction, Pa., January 7, 3:37 a. m.—Light engine No. 3839, moving west at about 18 miles an hour, collided with light engine 3607 standing on the main track without proper protection, and the conductor of the standing locomotive was killed. Five other employees were injured. This collision occurred within interlocking limits, on a four-track line, and blame is placed both on the signalman in the interlocking station and the engineman of the standing locomotive. The signalman allowed a movement against the current of traffic outside of interlocking limits, and the engineman failed to ascertain definitely whether permission had been obtained for making this movement. The brakeman of No. 3607 is also at fault for failing to give a stop signal when he saw that the locomotive was being wrongfully moved outside the home signal. The signalman, who had not much experience at this station, had sounded two blasts on the tower whistle, in order to have the engine movement hurried and this whistle signal seems to have led the brakeman to assume

that the movements that were being made were duly authorized.

*Oklahoma City-Ada-Atoka Railway*, Ada, Okla., January 8, 10:15 p. m.—A southbound work train consisting of four cars and a locomotive, the locomotive running tender first, moving at about six miles an hour, within yard limits, collided with a string of ten freight cars standing on the main track; and two persons were killed and five injured, all of them being men on the work train, carried under contract. The engineman of the work train is held responsible for not running with speed under control within yard limits and the conductor and switchman in charge of the standing cars responsible for not having provided flag protection. The rule to put a light on the end of cars standing on the main track was neglected, and the work train approached with no light in front except a white lantern on the end of the tender. The first that the engineman knew of the standing cars was by light shining on the roofs of some of the box cars; but the four cars at the north end of the string were coal cars, which he did not see; and he did not know of their presence until the tender struck them. The conductor in charge of the standing cars claimed that he had given proper instructions to the switchman but the switchman denies this. The report holds that if either the conductor or the switchman had made any attempt to obey the rules, the collision would have been averted. Some of the men at fault lacked experience.

#### Excessive Speeds in Varied Forms

*Oregon-Washington R. R. & N. Co.*, Preacher's Slough, Wash., January 11.—A freight train of 61 cars with a locomotive at the rear, moving east at about 15 miles an hour, collided, within yard limits, with a westbound freight which was at a standstill or moving very slowly backward. The conductor of the eastbound train and a traveling car inspector, both of whom were riding in the caboose, were killed. Responsibility is placed on the conductor of the eastbound train (who was killed) who had failed properly to supervise the backward movement of his train within yard limits.

*Illinois Central*, Belleville, Ill., January 11, 11:36 p. m.—Southbound passenger train No. 1159 was derailed while approaching Belleville station, on a curve of 12 deg., while moving at a speed estimated to have been between 25 and 45 miles an hour. The locomotive and first car were overturned at the outside of the curve and considerable damage was done to freight cars standing on the adjacent track. The engineman and fireman were killed and two passengers were injured. The cause was excessive speed on the sharp curve, the reason for which can only be conjectured; but the engineman may have been somewhat unfamiliar with the road. On the second night prior to January 11, this engineman had been accompanied by the road foreman as pilot. The conductor is criticised for not having paid special attention to the speed of the train, he knowing that the engineman was not entirely familiar with the line. The train was approaching the station where the speed is limited by rule to 15 miles an hour for a distance of one mile and to ten miles an hour at the point where the derailment occurred.

*Pere Marquette*, Fenwick, Mich., January 16—A southbound freight train, consisting of four cars and a caboose, hauled by a locomotive running tender first, was derailed while moving at about 15 miles an hour and the fireman and head brakeman were killed. One other employee was injured. The inspector finds that the derailment was due to poor track conditions and

also that probably the speed was greater than 15 miles an hour, which was the limit by rule on this part of the road.

*Detroit, Toledo & Ironton, Denver, Ohio, January 17.*—Southbound freight train extra 303 consisting of 22 cars and a caboose drawn by Locomotive No. 303, moving at moderate speed on a steep descending grade, ran into the rear of a preceding freight which had been stopped by a work train; and the locomotive fell down a bank. One employee was injured. The immediate responsibility is placed on the flagman of the leading train who, although there was a dense fog and his train had been stopped twice by the work train, did not make sufficient use of fuses and torpedoes. The flagman claimed to have thrown off a fusee but apparently he did not do this far enough back to do any good. The operator at Summit, some distance back, had allowed the extra to follow the other train in ten minutes whereas the rule requires an interval of 15 minutes. The operator said that disregard of this rule had been habitual and well known, and the report criticizes not only the operator but also the responsible operating officers who, it is held, have not efficiently supervised operations. The conductor and the engineman of the extra are also held to have exercised poor judgment in running too fast on the descending grade in time of fog, they knowing that they were within work train limits.

*Clinchfield, Chestoa, Tenn., January 21, 8 a. m.*—Southbound freight extra 312, holding an order to meet a northbound extra at Chestoa, departed from that place without right, and while moving at from 12 to 20 miles an hour, collided with the northbound train, which was a locomotive without cars, moving at about 15 miles an hour. Four employees were injured. The entire crew of the southbound train except McCurry, middle brakeman forgot the meeting order and he is held at fault for not making himself acquainted with the contents of orders held by the conductor. All the other members of the crew had read the order and understood it; yet all of them forgot. The conductor and the engineman had been on this run for over two years and often had met the northbound locomotive at Chestoa. It appears that while the conductor had gone a short distance away from the station at Chestoa, the train was started by McCurry without authority, and the conductor came near being left; the possible confusion over this incident was the only thing the conductor could think of as an explanation of his forgetting the order.

*Southern, Landis, N. C., January 21, 6:55 p. m.*—Northbound freight train No. 62, which had just set back through a cross-over to the southbound track, was run into by southbound freight train No. 55, and one employee was injured. No. 62 should have been protected by flag and the neglect of this is charged against the head brakeman, the engineman and the conductor. The engineman and the conductor appear to have assumed that the brakeman would proceed north in due season, and they did not watch him. The brakeman, when he started to go, found that his red lantern had gone out; and trying to light two fusees, he was unsuccessful; and in consequence of this delay or confusion he neglected to use torpedoes and did not give any effective signal to No. 55 until it was close upon him. The movement through the crossover should not have been made until two minutes after the switches were turned. Possibly this length of time was allowed to elapse but the report indicates that the southbound train had received a clear indication at the automatic signal, about 1.8 miles north of the point of collision. How-

ever, it is not certain that the full period of two minutes would have been sufficient in this case and, says the report, the two-minute rule does not afford suitable protection at this point unless the approaching train is running at least 54 miles an hour. The auto-manual automatic train stop is in use on this division but as No. 55 passed the inductor before the track circuit was opened, the automatic stop could not function.

*Seaboard Air Line, Helena, Ga., January 22, 5:23 a. m.*—A switching locomotive standing on a side track in charge of a watchman, started, (apparently because of something wrong about the throttle or the reverse lever) and, passing over a 2-inch block on the rail and also over a derail, ran about 500 ft. on the main track when it collided with a standing freight train, while moving at about 20 miles an hour. One employee was injured. The watchman made some little attempt to stop the engine but, fearing the consequences of a derailment at the derail, he jumped off and left the engine to run unattended. He had started the fire in the engine a short time before and claimed that the reverse lever was on center and the throttle closed but the inspector seems to have little confidence in his statements. The watchman had noticed steam escaping from the cylinder cocks and he claims that then he examined the throttle and reverse lever but found them all right. The inspector did not find out why the engine had passed over the derail without being thrown off the track.

*Illinois Central, Mounds, Ill., January 22, 10:51 p. m.*—A freight train of 29 cars, moving slowly southward on a side track toward a switch where it should have stopped before fouling the main track, was permitted to continue beyond the frog and was struck by southbound passenger train, No. 5, moving at 30 or 40 miles an hour, making a bad wreck. The engineman and one brakeman of the freight were killed and five passengers, five employees, one trespasser and one other person were injured. The inspector cannot conjecture why the freight engineman neglected to stop as he knew that the passenger train was due. The conductor is held jointly responsible, though the only specific error charged against him is that he allowed his marker lights to show red when, because of being on the side track, they should have shown green, but this error would likely do more good than harm; and the engineman of the passenger train, seeing those red lights, thought he was being tested as to obedience of the rules and, having been running at about 60 miles an hour, he applied the brakes, though not soon enough to slacken the speed very much. A road foreman was on the engine of the passenger train and he also thought that the red lights were being displayed as a test. The automatic signal, near the fouling point, which was set against the passenger train by the presence of the freight close to the main track, was not turned to red soon enough to be of any help in stopping the passenger train. The conductor and the flagman were running on this section of the road not more than once a month. The fireman did not have a copy of the time table and he also runs on this section of the road infrequently. The fireman said that the engineman had been off duty, sick, for two weeks prior to January 22, but had not complained of feeling ill on that day.

*New York, New Haven & Hartford, Thomaston, Conn., January 23, 8:15 a. m.*—Northbound passenger train No. 2104, traveling at high speed, was derailed on a curve of seven or eight degrees and the locomotive was overturned. The engineman, the fireman and one

(Continued on Page 433)



# How the D.L. & W. Uses Tabulating Machines

*Saves \$600 a month in computing car, train and locomotive miles, tons, ton-miles and per diem*

By V. D. Thayer

Car Accountant, Delaware, Lackawanna & Western

**A** TABULATING machine installation has been used in the car accounting department of the Delaware, Lackawanna & Western since January, 1925, for the following purposes:

1. Computing
  - (a) Freight Car Mileage (Separated as between freight, mixed, special and non-revenue service trains).
    - Caboose—East and West.
    - Box cars—Loaded and empty, East and West
    - Open cars—Loaded and empty, East and West
    - Misc. cars—Loaded and empty, East and West
  - (b) Gross and Net Ton Miles—Freight and mixed trains.
    - Weight of cars—10 districts, East and West
    - Weight of contents—10 districts, East and West
  - (c) Train Miles—
    - Freight, Light Freight and Mixed—10 districts East and West
    - Passenger—Special and Non-Revenue,—5 Operating Divisions—East and West.
  - (d) Train time on road—Freight and mixed trains.
  - (e) Engine Mileage—
    - Freight and Mixed—Principal, Helper and Light—10 districts—East and West.
    - Passenger—Special and Non-Revenue,—5 Operating Divisions—East and West.
    - Individual Engines—17 classes of service.
  - (f) Locomotive Ton Miles.
2. Auditing
  - (a) Per diem, amounts received.
  - (b) Per diem, amounts paid.

It is conservatively figured that these machines have made possible a net saving of approximately \$600 per month.

The machines used in the installation are three key punches, one sorter and one printing tabulator. Four

different cards are used, and the work requires the punching of approximately 240,000 cards per month, but the card expense is reduced over 60 per cent by the fact that some cards are used two months, some four months and some six months.

The number of cards punched in an eight-hour day varies from 2,800 to 6,000, according to the number of columns punched. The sorter will handle 400 cards per minute, sorting to twelve positions in any single column. The tabulator, with printing attachment, prints 75 cards per minute when each card is listed, and adds 150 cards per minute when totals are accumulated; and will permit any one item being used in three entirely different totals in one operation.

## Engine, Train and Ton-Mile Computation

A punched card in use for tabulation of engine, train, car and ton-mile statistics is shown in Fig. 1. It is prepared by a comptometer operator directly from freight wheelage reports, and across the top of the card is inserted with pencil the information indicated. As "Month" and "Day" serve no purpose if punched, train switching miles are inserted in pencil in column 5 (Month) and punched in columns 6 and 7 (Day). One card is made out, not for a train, nor for a car, but for all cars in a train moving the same distance in one district. The districts are coded and the code numbers separate the eastward and westward movements. At times a number of cards are necessary to report one train, but on one card only is shown the train switching miles, engine number, train, caboose, time on road and

DATE	1-17	18	CABOOSE	HRS.-TIME-MIL.	DISTRICT	RD.-MILEAGE-T.	LD.-BOX-MTY.	LD.-OPEN-MTY.	LD.-MISC.-MTY.	M'S OF CARS	M'S OF CONTENTS								
SERVICE	0	12	1	5 50	01	141	1 41	2	7 1	3 2	2314 1864								
112345	1203	11	DAY	ENGINE NUMBER	TRAIN	CAB	TIME		DISTRICT	MILEAGE		BOX		OPEN		MISC.		M'S OF CARS	M'S OF CONTENTS
							HRS.	MIN.		ROAD	TML	LOADED	EMPTY	LOADED	EMPTY	LOADED	EMPTY		
	0000	0	00	0000	00	00	00	00	0000	0000	00	00	00	00	00	00	00	00000	00000
	1111	1	1	00111	00	00	11	11	1100	1100	11	11	11	11	11	11	11	11111	11111
	2222	2	2	20222	22	22	22	22	2222	2222	22	22	22	22	22	22	22	22222	22222
	3333	3	3	33330	33	33	33	33	3333	3333	33	33	33	33	33	33	33	33333	33333
	4444	4	4	44444	44	44	44	44	4444	4444	44	44	44	44	44	44	44	44440	44440
	5555	5	5	55555	55	55	55	55	5555	5555	55	55	55	55	55	55	55	55555	55555
	6666	6	6	66666	66	66	66	66	6666	6666	66	66	66	66	66	66	66	66666	66666
	7777	7	7	77777	77	77	77	77	7777	7777	77	77	77	77	77	77	77	77777	77777
	8888	8	8	88888	88	88	88	88	8888	8888	88	88	88	88	88	88	88	88888	88888
	9999	9	9	99999	99	99	99	99	9999	9999	99	99	99	99	99	99	99	99999	99999
	0000	0	0	00000	00	00	00	00	0000	0000	00	00	00	00	00	00	00	00000	00000

D. L. & W. R. CO.—CAR ACCOUNTANT

Fig. 1

MILEAGE											
DAY	12	11	10	9	8	7	6	5	4	3	2
0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9	9

Fig. 2

terminal miles, for the reason that showing the information on more than one card would cause a duplication. The information then available from the card comprises freight car mileage, separated as between box, open and miscellaneous, loaded and empty, east and west, weight of cars, weight of contents, by districts, and by directions, time on road, caboose mileage, total engine mileage (engines with freight trains) by individual engine, and terminal miles, train switching miles, and all of the information or any part of it separated as between classes of service.

The first operation after the card has been punched is to sort by classes of service (column 8, Fig. 1). The cards in the first sort "Freight East" are then sorted in column 24, units column of the mileage distance, for the purpose of figuring car miles. The car mileage is then computed under what is known as the "Digit System", which means simply that in 19 multiplications each item can be obtained, thus eliminating all multiplications as wheelage reports are worked.

To explain in detail—after sorting has been done in column 24, all of the "one" cards are sent through the tabulator and totals accumulated and printed for—

Box Cars—Loaded  
 " " —Empty  
 Open " —Loaded  
 " " —Empty  
 Misc. " —Loaded  
 " " —Empty  
 Caboose Cars

The operation is repeated for each of the other sorts in that column. The cards are then sorted in the "tens" column, i. e., Col. 23, and totals of the same items accumulated and printed in exactly the same way. In the "hundreds" column, i. e., Col. 22, the operation is repeated.

Figures as they come from the tabulator for one day's operation are here shown:

	FREIGHT CAR MILEAGE						
	Box		Open		Misc.		Caboose
East	Loaded	Empty	Loaded	Empty	Loaded	Empty	
1 mile	921	35	304	92	76	7	31
2 miles	398	140	264	102	5	7	9
3 "	1632	465	535	76	171	28	22
4 "	332	215	806	94	22	11	19
5 "	148	119	39	56	9	6	4
6 "	810	37	195	154	32	13	29
7 "	300	191	83	167	23	23	14
8 "	246	146	94	222	3	25	19
9 "	1525	596	285	695	123	79	76
10 "	846	220	315	203	36	34	40

	FREIGHT CAR MILEAGE				Misc.		Caboose
	Box		Open		Loaded	Empty	
East	Loaded	Empty	Loaded	Empty	Loaded	Empty	
20 "	265	16	445	12	2	5	
30 "	545	102	226	26	57	7	26
40 "	859	43	220	94	72	4	25
50 "	187	61	27	104	12	14	4
60 "	221	25	69	4	12	5	4
70 "	84	12	2	4	1	1	2
80 "	114	46	62	58	5	4	4
90 "	148	17	201	38	4	4	9
100 "	1950	160	587	215	161	16	64

The 41 loaded box cars moving 141 miles are included in the 921 cars moving one mile, in the 859 cars moving 40 miles and in the 1950 cars moving 100 miles; the two empty box cars are included in the 35 cars moving one mile, in the 43 cars moving 40 miles and in the 160 cars moving 100 miles; the open and miscellaneous cars, loaded and empty, are included in their respective totals in the same manner.

Each item, i. e., loaded box, empty box, etc., is multiplied by the distance on an electric calculator (not a part of this installation), all multiplications for each item being accumulated in the machine until the total of each item is secured.

All cards are then sorted by districts, columns 21, 20 and 19. Each district is sorted by mileage distance, (columns 22, 23 and 24), and the "Digit System" is again used for accumulating the weight of cars, weight of contents and number of trains. While cards are going through the tabulator for that purpose actual terminal miles (column 25) and train switching actual miles (columns 6 and 7) are accumulated. That completes the gross and net ton statistics and figures are usually available by the 13th of the following month.

These figures as they come from the tabulator appear as follows:

GROSS TONS—EASTWARD						
District	Miles	M's Cars	M's Contents	Trains	Terminal Miles	Train Switch Miles
1	0	23144	22594	17	14	192
1	1	1173004	917790	514	503	1206
1	2	60845	115626	17	1	30
1	3	7534	6894	1		
1	4	29579	28993	22	35	381
1	5	25611	5111	8	3	36
1	6	55033	43763	19	18	42
1	7	61040	57230	81	77	786
1	8	24841	17595	5	9	
1	9	43019	6090	10	7	78
1	10	93723	65400	23		
1	20	20761	14667	6		
1	30	15239	7222	10		
1	40	1103310	792673	515		
1	50	14248	5842			



GROSS TONS—EASTWARD					Terminal Miles	Train Switch Miles
District	Miles	M's Cars	M's Contents	Trains		
1	60	61463	120494	32		
1	70	53116	22741	36		
1	80	2158	2755			
1	90	3153	4171			
1	100	1213914	950350	536		

The next operation is to accumulate train-miles and train-hours, and the cards are sorted in the units column of the engine number, for it is on the engine cards only that trains (column 13) and train hours (columns 15 to 18) are punched. It is then necessary to sort the cards again to classes of service (column 8). The cards representing each class of service are sent through the tabulator and totals accumulated for train-miles and train-hours, separated by direction only.

#### Locomotive Mileage

The engine cards are sorted in numerical order, which is accomplished by running the cards through the sorter in columns 11, 10 and 9, in the order named. The cards are placed in the tabulator, which makes a printed statement of the total mileage by each individual engine. A "control" switch on the tabulator causes the machine to stop and print the total when an engine number changes, regardless of the number of cards for one engine number. The machine automatically restarts and accumulates total mileage for next engine number. In the same operation totals of columns 6 and 7 (Train Switching Miles) and column 25 (Terminal Miles) are accumulated. The information is usually all taken from this card by the 13th of the following month.

The engine mileage card, Fig. 2, as punched and here reproduced covers all locomotive miles not taken from the previous card. The information punched on the card is taken from a train roster prepared in each dispatcher's office, and the card is used for two months.

The cards are sorted in column 11 to separate classes of service. Engines in freight and mixed service (sorts 2 and 12) after being sorted in 10 districts, east and west, (columns 10 and 9) are sent through the tabulator and total mileage accumulated and printed for freight and mixed helper and light, each district and direction. Four classes of service; passenger, suburban passenger, non-revenue passenger and special (sorts 0, 1, 3 and 11) are sorted by division (column 10) and direction (column 8), and are sent through the tabulator to accumulate and print total mileage by classes of service, division

and direction, principal, helper and light. The remaining classes of service (sort 4 to 9, inclusive) cover switching and are sorted by divisions only (column 10). For a special statement all cards are then sorted by engine numbers (columns 7, 6, 5 and 4) and total mileage accumulated and printed for class of service, principal, helper and light.

#### Auditing Per Diem Accounts

Fig. 3 shows the punched card used in auditing per diem "amounts received." Each card covers the per diem allowance made by one railroad and information is taken from the incoming per diem report. As but seven columns are required the card, can be used six times, or in other words for six months. The name of the railroad making the per diem allowance is stamped with a rubber stamp at the top of the card. These cards are punched at the rate of 6,000 per eight-hour day, and are stamped at the rate of about 28,000 per day.

The stamping feature can be overcome by using a code number for each railroad and punching it on the card, but that reduces the use of the card from six months to four months, and not only increases the cost of cards but decreases the number of cards punched per day.

At the end of the month after a card has been punched for every allowance made by all railroads, cards are sorted to numerical order, so that all allowances by all railroads on a single car are together. This is accomplished by sorting first in the units column, then the tens column, then the hundreds, etc., 60,000 cards, which represent allowances for a month are sent through the sorting machine in about two days, 5 sorts being necessary.

#### Two Methods of Checking

Two methods of checking are then possible:

(a) The cards can be checked against the extensions in the records, which have been previously made, at the rate of 3,200 per eight-hour day, and per diem claims can be made for shortages when all cards for one car have been checked, thus saving the time of going over the entire set of records after checking the per diem reports. If checking is done in this way cards are not sent through the tabulator.

(b) The cards can be sent through the printing tabulator and totals accumulated for the entire time a single car is off line. The printed sheet from the tabulator can then be checked against the record for total days off line, which method will reduce to some extent the time required for checking.

January		March		May		July		September		November		D. L. & W. R. CAR ACCOUNTANT
0 0 0 0 0	0 0	0 0 0 0 0	0 0	0 0 0 0 0	0 0	0 0 0 0 0	0 0	0 0 0 0 0	0 0	0 0 0 0 0	0 0	
1 1 1 1 1	1 1	1 1 1 1 1	1 1	1 1 1 1 1	1 1	1 1 1 1 1	1 1	1 1 1 1 1	1 1	1 1 1 1 1	1 1	1 1 1 1
2 2 2 2 2	2 2	2 2 2 2 2	2 2	2 2 2 2 2	2 2	2 2 2 2 2	2 2	2 2 2 2 2	2 2	2 2 2 2 2	2 2	2 2 2 2
3 3 3 3 3	3 3	3 3 3 3 3	3 3	3 3 3 3 3	3 3	3 3 3 3 3	3 3	3 3 3 3 3	3 3	3 3 3 3 3	3 3	3 3 3 3
4 4 4 4 4	4 4	4 4 4 4 4	4 4	4 4 4 4 4	4 4	4 4 4 4 4	4 4	4 4 4 4 4	4 4	4 4 4 4 4	4 4	4 4 4 4
5 5 5 5 5	5 5	5 5 5 5 5	5 5	5 5 5 5 5	5 5	5 5 5 5 5	5 5	5 5 5 5 5	5 5	5 5 5 5 5	5 5	5 5 5 5
6 6 6 6 6	6 6	6 6 6 6 6	6 6	6 6 6 6 6	6 6	6 6 6 6 6	6 6	6 6 6 6 6	6 6	6 6 6 6 6	6 6	6 6 6 6
7 7 7 7 7	7 7	7 7 7 7 7	7 7	7 7 7 7 7	7 7	7 7 7 7 7	7 7	7 7 7 7 7	7 7	7 7 7 7 7	7 7	7 7 7 7
8 8 8 8 8	8 8	8 8 8 8 8	8 8	8 8 8 8 8	8 8	8 8 8 8 8	8 8	8 8 8 8 8	8 8	8 8 8 8 8	8 8	8 8 8 8
9 9 9 9 9	9 9	9 9 9 9 9	9 9	9 9 9 9 9	9 9	9 9 9 9 9	9 9	9 9 9 9 9	9 9	9 9 9 9 9	9 9	9 9 9 9
1 2 3 4 5	6 7	8 9 10 11 12	13 14	15 16 17 18 19	20 21	22 23 24 25 26	27 28	29 30 31 32 33	34 35	36 37 38 39 40	41 42	43 44 45
500871												

Fig. 3

INITIAL	CAR NUMBER	DAYS	INITIAL	CAR NUMBER	DAYS	INITIAL	CAR NUMBER	DAYS	INITIAL	CAR NUMBER	DAYS	D. L. & W. R. R. - CAR ACCOUNTANT
●●●	0000000	000	●●●	0000000	000	●●●	0000000	000	●●●	0000000	000	0
111	1111111	111	111	1111111	111	111	1111111	111	111	1111111	111	1
222	2222222	222	222	2222222	222	222	2222222	222	222	2222222	222	2
333	3333333	333	333	3333333	333	333	3333333	333	333	3333333	333	3
444	4444444	444	444	4444444	444	444	4444444	444	444	4444444	444	4
555	5555555	555	555	5555555	555	555	5555555	555	555	5555555	555	5
666	6666666	666	666	6666666	666	666	6666666	666	666	6666666	666	6
777	7777777	777	777	7777777	777	777	7777777	777	777	7777777	777	7
888	8888888	888	888	8888888	888	888	8888888	888	888	8888888	888	8
999	9999999	999	999	9999999	999	999	9999999	999	999	9999999	999	9
1 2 3	4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45											

Fig. 4

The method commonly used by railroads is to check the incoming per diem report directly against the record, but the time that can be saved in checking either directly from cards, which represent allowances by individual railroads, or from the printed sheet from the tabulator, which show total allowances by all railroads on one car for one month, is shown in the following comparison, which represents the time required to check approximately 60,000 per diem allowances.

	Eight Hour Days
Checking directly from per diem reports .....	50
Checking from cards .....	19
Printing and checking from printed sheet (Total time off line) .....	16

The information appearing on the list coming from the tabulator, if the second method of checking is followed, will be:

D. L. & W. Car Number	Days
44147	30
44148	31
44149	9
44150	31
44151	21
44152	20
44153	24
44154	23
44155	29
44156	21
44157	21

The allowance of 30 days on D. L. & W. 44147 represents 11 days allowed by one railroad, 6 days by another, and 13 days by another.

#### Checking Per Diem Payments

Punched cards showing method of computing per diem amounts paid are shown in Figs. 4 and 5. These cards represent a car received on the 15th and delivered on the 20th, which is on line 5 days. By punching 85 (complement of 15) and punching 20 the machine will add the two items making a total of 105, and can be set to print only the 5, and print also the car number but once. That gives a printed statement showing car number and number of days on line.

Every foreign car on a per diem basis is given a code number to represent ownership. This code number is placed on the broad sheet or file copy of the interchange report. A key punch operator then punches on a card, at the rate of about 4,500 cards per day, the code number, car number and date of delivery, or complement of the date of receipt. A card is not punched for cars received on the last day of the month, for no per diem is paid on such cars. However, after per diem has been

INITIAL	CAR NUMBER	DAYS	INITIAL	CAR NUMBER	DAYS	INITIAL	CAR NUMBER	DAYS	INITIAL	CAR NUMBER	DAYS	D. L. & W. R. R. - CAR ACCOUNTANT
●●●	0000000	000	●●●	0000000	000	●●●	0000000	000	●●●	0000000	000	0
111	1111111	111	111	1111111	111	111	1111111	111	111	1111111	111	1
222	2222222	222	222	2222222	222	222	2222222	222	222	2222222	222	2
333	3333333	333	333	3333333	333	333	3333333	333	333	3333333	333	3
444	4444444	444	444	4444444	444	444	4444444	444	444	4444444	444	4
555	5555555	555	555	5555555	555	555	5555555	555	555	5555555	555	5
666	6666666	666	666	6666666	666	666	6666666	666	666	6666666	666	6
777	7777777	777	777	7777777	777	777	7777777	777	777	7777777	777	7
888	8888888	888	888	8888888	888	888	8888888	888	888	8888888	888	8
999	9999999	999	999	9999999	999	999	9999999	999	999	9999999	999	9
1 2 3	4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45											

Fig. 5



extended in a foreign record, a list is made of cars received and delivered on the last day of the month, and cards are then punched to represent the receipt, for in such cases a card representing the delivery has already been punched from the interchange report. A list is also made of all cars on hand on the last day of the month and a card is punched for each car. Cards are punched for all interchange corrections received until the cars in a book are transcribed to a per diem report.

### The Importance of Accuracy

It is most important in this work that cards be accurately punched to cover every interchange record, for every error made in punching is registered on the printed strip coming from the machine and must be checked up. Unless extreme care is used in punching, and unless corrections to, and missing, interchange reports are obtained by the 15th of the following month a sufficient number of errors or omissions in the cards may cause such a volume of differences between the per diem report and the printed sheet coming from the tabulator as to make entirely impracticable this method of double checking.

After all punching has been done for the month, the sorting is done, first by code number, which separates the railroads, then by car number, and in a way to have car numbers appear on list coming from the tabulator in the same order as car numbers are shown in foreign records. Cards are then sent through the tabulating machine, which totals all items for any one car, printing the car number but once for the total days on line.

The items appear on the printed strip in the following manner:

Car Number	Days
47001	2
96001	6
202001	8
277001	4
278001	
287001	4
741001	8
14101	3
30101	2
33101	5
158101	29
168101	4
216101	3
253101	3
355101	2

They are then checked against the outgoing per diem report, and all differences checked against foreign records and interchange reports when necessary, these differences developing just what per diem deductions and additions should be made.

By the use of these cards a verification of every date representing the receipt and delivery of a foreign car, the extension of every per diem amount in a record, and the transcription of every car number and number of days on line to the per diem report, is made. This verification or double checking of per diem amounts paid is done by but few railroads, but considering the amount of money involved (the D. L. & W. paying approximately  $2\frac{1}{2}$  million dollars in per diem in 1928) it seems justified, although in some months the actual expense of the verification exceeds the amount of money involved in the errors found. The over-payments of per diem and penalty amounts due on short-payments would amount to from \$200 to \$500 per month if the double checking were not done. The expense of the double checking is approximately \$300 per month.

This method of double checking per diem payments has resulted in but 53 per diem claims being paid during the calendar year of 1928. During the same period per diem reports to foreign railroads showed a total of 499,672 cars, and a payment of \$2,346,697.65.

## Accident Investigations, January

(Continued from page 428)

passenger were killed and seven passengers were injured. This was a train of one locomotive and two cars, both of wooden construction; and the wreck of the locomotive and first car was complete, but the second (rear) car continued on the track and ran about 700 ft. beyond the wreck of the front portion of the train. The rule limits the speed at this point to 35 miles an hour and why the engineman (who was killed) failed to slacken his speed cannot be explained. He had been in service over 50 years, had passed annual physical examinations for the past five years and had a good record of compliance with speed rules and other regulations. The conductor, who was in the second car, testified that he had noticed nothing unusual in the movement of the train, although it is believed to have been traveling at about 60 miles an hour. Several witnesses testified to the unusual speed.

*Chicago & North Western, Chicago, Ill., January 26.*

—A train of empty passenger cars, being backed into the terminal station at low speed, ran into the side of passenger train No. 559, moving out of the station at about 8 miles an hour, and one coach in train 559 was overturned. One passenger was killed and 51 were injured. The empty train had become uncontrollable because of a piece of ice in the air brake line which prevented the setting of the brakes. The outdoor temperature at the time was about 18 degrees above zero. Careful inspection of the hose where the obstruction was found failed to disclose anything that would have caused the formation of the ice. This was the first accident of this kind recorded on this railroad since January, 1915. The cars of train 559 were of wood and the inspector believes that, with steel cars, at the low speed it is very doubtful if the results of the collision would have been serious.

\* \* \*



The E. P. & S. W. (S. P.) General Office Building at El Paso, Texas

## Communications and Books

### A Simple Solution to a Perplexing Problem

PHILADELPHIA, PA.

TO THE EDITOR:

If the railways would make a rate in coaches of two cents or one and one-half cents per mile for a 30-day round-trip, it then would be simply a question of how they could get cars enough to haul the passengers. What the railways need is a Woolworth or a Henry Ford to show them how to get the dear public to ride in very large numbers.

H. M. BARNET.

### Regaining Passenger Business

SHAWNEE, OKLA.

TO THE EDITOR:

In my opinion, one of the most important things to do to regain passenger business is to arrange the schedules of roads serving the same point so that passengers arriving on one road will have time to catch a train leaving on another. In many instances, 15 minutes would be ample to enable passengers to connect with a departing train and these few minutes would relieve the patrons of the anxiety of seeing the desired train depart without them and of anticipating a long wait for the next train. They wait, but it is probable that the next time they will use the motor coach.

Passengers do not like to sit in a car on a side track waiting for a freight train to pass and, with side tracks from five miles to eight miles apart, there is no good excuse for holding a passenger train on the side track for 20 min. or 25 min. When the freight train waits, the delay is very short and, although the passenger train may be able to "run off" part of its lost time, the delay may cause patrons to miss a connection. Some dispatchers make a practice of holding passenger trains for freight trains, believing that the former can head in and out of the siding more easily than the latter, but the fact remains that passengers are satisfied while the train is moving and irritated when it is standing still for from 10 min. to 30 min. Passengers must be kept moving and efforts in this direction will be more effective than excessive advertising.

J. L. COSS,

Assistant Chief Dispatcher, Chicago, Rock Island & Pacific.

### Detecting Transverse Fissures at the Mill

READING, PA.

TO THE EDITOR:

I have read with much interest your editorial comment on transverse fissures, which appears on page 137 of your issue of July 13. As transverse fissures often develop quickly after rails are placed in track and with apparently no regard for the contour or size of the rail section or the chemistry of the rail, it has always been my opinion that their underlying cause can be found in the mill practice by which the rails were produced.

I have been told of a case on one of the eastern railroads where a new rail, which broke when it was dropped from the side of a car, showed a large transverse fissure. As the rail had never been in the track, the transverse fissure could only be explained on the basis that it had developed in the rolling or in the straightening process at the mill.

It is my understanding that James E. Howard, engineer-physicist of the Bureau of Safety of the Interstate Commerce Commission, has always been of the opinion that transverse

fissures were due to punishment administered by the passage of heavy wheel loads, defective wheels, locomotives not properly counterbalanced, etc. I believe these influences have very little to do with the initial cause of a transverse fissure, although undoubtedly they have a considerable bearing on its growth.

The Sperry transverse fissure detector car is a very interesting development, but the most important thing to be done in connection with the transverse fissure is to develop a machine which will detect any rails, at the steel mills that contain transverse fissures or their nuclei. More important still is a thorough tabulating of the various phases of mill practice and the compilation of records of performance of rails made by each variation in the practice. By doing this, through the ordinary process of elimination, the very best mill practice can be determined and a code of mill practice settled on which will result in the elimination of all transverse fissures.

R. B. ABOTT

Assistant General Superintendent, Reading Company

### Support Your Associations

NEW YORK.

TO THE EDITOR:

In the July 20 issue of the *Railway Age* I read with great interest the editorial "Why Some Members Drop Out."

I fully agree with all that is said. It is a well-known fact that all of the technical associations that are affiliated under the American Railway Association were never so well handled as they are today. We have the backing of our higher officials in our work, no dues to pay and our meetings are all arranged for us by able secretaries in a businesslike manner. We are honored by the attendance of many of the A. R. A. officials who take part in our meetings—we have their support.

The papers and reports, in many cases, are the results of collecting data and information that has taken months to get together. They are not only interesting, but educational, and contain valuable and constructive information.

The purpose of the conventions is to have all the reports and papers discussed in the meeting; questions should be asked. By so doing all have the opportunity to gather reliable information they are seeking. It is regretted that some officials do not seem to take more interest in such meetings and that they do not have representatives present.

I know of one railroad officer who called into his office the party in charge of the equipment on his road and asked him, "What is the matter with our cars and locomotives; they don't look in as good condition as those of our connecting lines."

The reply was, "I don't know what the other roads use to keep their equipment in good condition. You have never let your men go to any conventions, or clubs, or visit other roads to secure information as to their methods. We simply run along in the same old rut, no up-to-date methods." The result was that he got orders then and there to go out and make a study of what was needed to improve the equipment.

If we don't contribute to the compilation of and thoroughly discuss all the reports and papers, our conventions may be a thing of the past, and all matters that we now consider in our meetings may be handled by committees of the A. R. A. and settled through its Executive Committee by the issuance of circular letters to the railroads.

Most of the railway associations are making such great contributions to the efficiency and economical administration of the railroads of this country and Canada that they should be given every reasonable assistance and support by the railway managements.

F. W. BRAZIER.



## New Books

*American Railway Association, Signal Section; Proceedings, Volume XXVI, 1928: H. S. Balliet, secretary. Cloth. 1007 pages. 6 in. x 9 1/4 in. American Railway Association, 30 Vesey Street, New York City. Price \$8.00 (To members of the Signal Section, \$4.00).*

This volume contains the reports presented at the meetings held at Atlantic City, N. J., in September, 1928, and at Chicago in March, 1929, together with minutes of the discussions at those meetings. Among the principal subjects dealt with which are of general interest are those on automatic train control; on yard operation and car retarders; dispatcher control and remote operation of switches; highway grade crossings, signaling and relation to state governments; and important installations of automatic block signals installed in place of manual block signals and as a substitute for interlocking signals at grade crossings of one railroad with another.

*Universal Directory of Railway Officials, 1929. Bound in cloth. 385 pages, 8 1/4 in. by 5 1/4 in. Published by the Directory Publishing Company, Ltd., 33 Tothill St., Westminster, London. Price \$5.*

This is the thirty-fifth edition of this well-known volume containing lists of railroad officials in Great Britain, Europe, Africa, Asia, Australasia, North, Central and South America. The directory, in the usual form, once more brings its lists up to date and, as formerly, includes in the case of each railroad, the name, the gage, the mileage, the equipment and the principal executive, financial, engineering and operating officers. The volume is carefully indexed by officers and also by railways and railway institutions and associations. It closes with a list of manufacturers and retailers of railway equipment, supplies, machinery and tools.

## Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*Economic Co-operation of Japan and China in Manchuria and Mongolia, Its Motives and Basic Significance*, by Yosuke Matsuoka. Discussion of economic conditions in Manchuria and the effect of railways. 19 p. Translated from a pamphlet published at Darien by the Sino-Japanese association of Manchuria. The author is vice-president of South Manchuria Railway.

*Report on Progress in Manchuria, 1907-1928.* Issued by South Manchuria Railway. Contains chapters on historic background, industries, economic situation, and railways of Manchuria, with illustrations and a folded map. 238 p. Darien, Manchuria.

*Seventeenth Annual Report of the Medical Department, United Fruit Company.* Contains several articles dealing with medical work in the various railroad hospitals of the company. 381 p. Issued by the General Office, United Fruit Company, Boston.

*Types of consolidations and mergers in America and Europe*, by Dwight T. Farnham. "An attempt to classify the various corporate and economic types of combinations in America and Europe." Issued by American Management Association as General Management Series No. 88. New York. 75 cents.

### Periodical Articles

*Holding Companies Face I. C. C. Quiz. To Probe Recently Organized Corporations Where Competition Has Been Affected.* Discussion of the attitude of the Interstate Commerce Commission toward holding companies. *Barron's* August 12. p. 12.

*The Internal-combustion Engine in Railroad Service*, by S. T. Dodd. Advantages of applying this type of engine to railroads. *General Electric Review*, August. p. 437-39.

*The Manchurian Crisis.* Reprint of articles relating to Chinese Eastern Railway, in the preliminary agreements of May 31, 1924 between China and Russia. *Nation*, July 31. p. 126.

## Looking Backward

### Fifty Years Ago

The recent acquisition by the Chicago, Milwaukee & St. Paul of the Southern Minnesota, 218 miles in length, and the Davenport & Northwestern, 160 miles long, gives that company the largest mileage operated by a single railway in this country and in the world—2,363 miles.—*Railway Age*, August 14, 1879.

The railroad committee of the Georgia Legislature has decided to report a bill providing for the appointment of a railroad commission and its endowment with power to regulate the railroads. Each of the three commissioners would be required to furnish a bond of \$10,000 and would be paid a salary of \$1,600 annually. One of the sections of the bill prescribes stringent methods to prevent pooling.—*Railway Review*, August 16, 1879.

The directors and stockholders of the Texas & Pacific, at the annual meeting at Philadelphia, Pa., on August 13, authorized bonds to be issued, not to exceed \$20,000 per mile, for the completion of the road from Fort Worth, Tex., to the Pacific coast, a distance of over 1,200 miles. On May 31, 1879, this railroad had 444 miles of line in operation. A loss of 8.37 per cent in gross revenue as compared with the preceding year was occasioned by the yellow fever epidemic in the South and the enforcement of such rigid quarantine regulations in Texas and in adjoining states as to cause a temporary suspension of nearly all business on the road.—*Railroad Gazette*, August 15, 1879.

### Twenty-Five Years Ago

For its Delaware avenue freight lines in Philadelphia, Pa., the Pennsylvania has adopted a girder rail 9 in. deep, weighing 141 lb. per yd. The roadbed consists of a layer of concrete 6 in. deep, above which the ties are ballasted in sand 1/2 in. deep, and covered by 8-in. paving blocks.—*Railways and Engineering Review*, August 20, 1904.

The first train to use the new Chicago, Rock Island & Pacific St. Louis-Kansas City line arrived in Kansas City, Mo., on August 15. Rock Island trains have been operating for the past two months over the Missouri, Kansas & Texas and the St. Louis & San Francisco tracks between Windsor, Mo., and Kansas City. The new line is 297 miles in length.—*Railway and Engineering Review*, August 20, 1904.

### Ten Years Ago

Director General Hines announced on August 8 that the Railroad Administration had sent inquiries to a number of steel companies asking each at what price it is ready to supply 100,000 tons of steel rails. This will be the second rail order by the Railroad Administration. Orders for 200,000 tons were placed in May.—*Railway Age*, August 15, 1919.

The Plumb plan has had its day in court and has relapsed into a state of propaganda. Six days of hearings before the House committee on interstate and foreign commerce were brought to a close on August 12 and the committee turned its attention to other phases of its search for a solution of the railroad problem. Glenn E. Plumb, counsel for the organized railway employees and author of the plan, was the principal witness.—*Railway Age*, August 15, 1919.

On August 7, B. M. Jewell, acting president of the Railway Employees' Department of the American Federation of Labor, ordered members of the six shop crafts unions who are out on strike to return to work. Just prior to this order President Wilson sent a letter to Director General Hines advising him that Congress had given the President full power to act and that the wage question would be considered on its merits by the director general in conference with accredited employee representatives.—*Railway Age*, August 15, 1919.

## *Odds and Ends of Railroading*

"Texas, Our Texas," the new official anthem of the Lone Star state, was composed by Mrs. Gladys Wright, of St. Louis, who is a clerk in the accounting department of the St. Louis-San Francisco.

### **More About Berths**

TO THE EDITOR:

Why all this drivel about sleeping car berths, when you ought to know that berths are made up as they are because most railroad men object to being carried feet first except by the undertaker? Ask any porter to tell his ideas about it.

THOMAS L. MOUNT

### **A Construction Veteran**

Thomas Sloan, who died in Guthrie, Okla., recently, at the age of 116, was one of the last of those hardy pioneers who pushed the construction of the Northern Pacific through to the Pacific Coast. Mr. Sloan was a superintendent of bridge construction while the railway was being built.

### **Phi Beta Kappa Brakeman**

Miguel Reynolds, of the Chicago & North Western, is one of the few railway brakeman who is also a member of the honorary scholastic fraternity of Phi Beta Kappa. He graduated from Cornell college in June and immediately assumed his new duties.

### **Missing Span Found**

A 57½-ton steel span, part of a bridge on the Northern Pacific 10 miles west of Glendive, Mont., which disappeared on June 6 when a cloudburst wrecked the bridge, was found on July 24 deeply embedded in mud, 230 ft. from the track. A cloudburst cut a channel 24 ft. deep under the bridge and after a temporary bridge had been constructed it was discovered that one of the spans, 87 ft. long, was missing. A search failed to disclose the missing span until the water receded and the mud-caked surface of the normally dry creek bed, cracking in the sun, revealed the outline of the girders. It was located right side up and practically level, 20 in. below the surface of the mud and at right angles to the right-of-way.

### **Railroaded to Prison**

Henry Tracy, address any place, destination anywhere, was considerably embarrassed and astonished recently to awaken in a penitentiary. Tracy had climbed into a box car the night before, yawned and gone to sleep. In the morning he was awakened by a group of men in khaki trousers and blue shirts and was astonished to learn he was in the North Dakota state penitentiary yard, where the car had been moved to be loaded with twine. The chagrined Henry was dismissed from the penitentiary when a check disclosed that he was not a prison inmate.

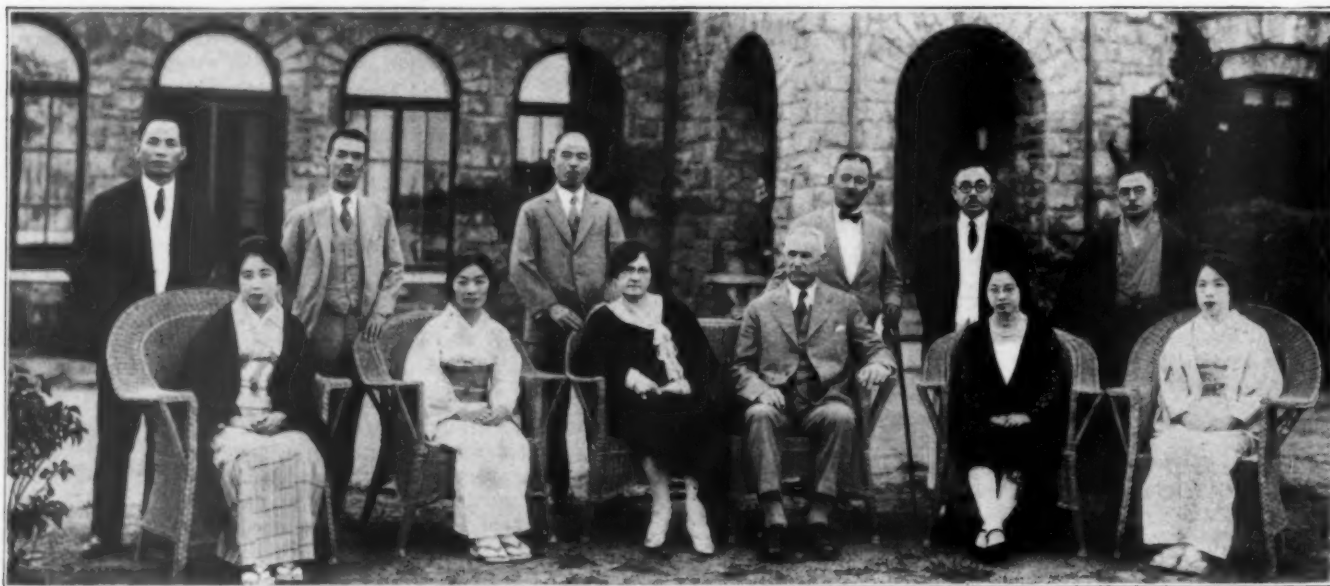
### **Car Cleaning Veterans**

The Chesapeake & Ohio boasts a veteran crew of car cleaners at Covington, Ky., who, it is said, can do work rings around much younger men. J. H. Schrage, aged 70, is car cleaner foreman, a position he has held for 43 years, his total service record being 45 years. The three veteran members of his gang were all born in Germany. Theodore Moellman is 72 and has 42 years of service to his credit, Frank Hoffhaus is 69, with 38 years' service, and August Rauf, a mere youngster of 58, has 35 years' service. The four men have a combined service record of 160 years.

### **They Like J. M. Gruber**

Upon the occasion of the departure of J. M. Gruber from Manchuria, he was showered with honors. Mr. Gruber, who has had a wide experience as general manager of the Chicago, Burlington & Quincy, vice-president of the Great Northern, vice-president of the Cuban Railroad, and special representative in Europe for the Baldwin Locomotive Works, was called to Manchuria some six months ago by the Japanese government. He analyzed the railway situation thoroughly and made recommendations as to the changes necessary to put the South Manchurian Railways on a parity with those in this country.

Upon the completion of his work, Mr. Gruber and his wife were tendered a farewell banquet by Vice-President Matsuoka of the South Manchurian line. Various departing gifts were presented to Mr. Gruber at the time, and the Manchurian Daily News printed a laudatory two-column editorial about his work.



Mr. and Mrs. Gruber and Some of Their Japanese Friends in South Manchuria



# NEWS of the WEEK



THE INTERSTATE COMMERCE COMMISSION has denied the application of the Pittsburgh & West Virginia for a rehearing and reargument in the case of the Wheeling & Lake Erie passenger terminal at Cleveland, O.

FRANK J. MILLER has been appointed a member of the Public Service Commission of Oregon and has been elected chairman of that body, to succeed Louis E. Bean, deceased. Mr. Miller was a member of the Commission from 1909 to 1919.

FIVE ARMED BANDITS held up a Canadian Pacific payroll automobile at Vancouver, B. C., on July 30 and escaped with negotiable checks valued at \$91,500. They overlooked \$73,000 in cash which arrived at the C. P. R. shops shortly after the robbery.

THE NUMBER OF EMPLOYEES IN SERVICE on the Class I railroads of the country at the middle of June, as reported by the Interstate Commerce Commission, was 1,736,131 which number is substantially the same as in June of 1928, but a decrease of 4.69 per cent under the month of June, 1927.

THE MISSOURI SUPREME COURT, on August 6, ruled that a Missouri statute which prescribes the type of construction of cabooses and the safety appliances with which it shall be equipped is unconstitutional. The court held that the law, which was passed in 1923 and was intended to apply only to cars used in intrastate business, was so framed that it affected cabooses used in interstate commerce.

## Canadian Shopmen on Vacation

The workmen in the shops of the Canadian National at Leaside, near Toronto, Ont., 200 of them, have just had a vacation of a week with pay, the shops being closed while the men were taking their holiday. This arrangement of vacations with pay, for men working by the hour, is said to be one of four years' standing, and the secretary of the Trades and Labor Council says that 14,000 employees of the Canadian National are beneficiaries under it. The Temiskaming & Northern Ontario is said to have this year adopted the same arrangement.

## Foreign Business Cars No Longer D. H.

Regulations governing the recording of passes, as issued by the Interstate Commerce Commission in 1917, are modified by an order issued on July 30, (by Division 4) which forbids the issuance of a pass for a car, except cars owned (or leased) by the carrier or by a line in the same system.

## B. & M. Safety Awards

A gold-bronze tablet has been awarded by the president of the Boston & Maine to general manager J. W. Smith, in recognition of the superior record in safety made by the employees of the operating department in the first six months of 1929; and the tablet is to be presented at a public dinner on August 21. The men of the operating department improved their record over the first half of 1928 by 38 per cent. Prizes in divisional contests are to be presented to their winners at the same time.

## Illinois Commerce Commission Reorganized

Governor Emmerson of Illinois, following the resignation of six members of the Illinois Commerce Commission and the death of a seventh, has made appointments as follows: Charles W. Hadley of Wheaton, Ill., an attorney, has been appointed chairman. Other new members are G. Gale Gilbert of Mount Vernon, a former state officer; Walter H. Wilson of Chicago, a banker; Philip W. Collins of Chicago, an insurance broker, and William N. Brinkman of Chicago, a real estate agent and former chairman of the public utilities committee in the state house of representatives. J. Paul Kuhn of Batavia, an attorney, who has been a member of the commission since 1927, was reappointed.

## Use Your Head and Save Your Feet

The above is the salient paragraph in circular No. 241, which has been issued by E. R. Cott, chairman of the Committee on Education, Safety Section, A. R. A., as a guide for the activities of railroad safety committees during the month of

September. The circular is addressed particularly to shopmen and others working with heavy machinery or other articles which might drop on a workman's foot, and it is illustrated by a half dozen wood cut engravings showing typical instances of injuries to feet by carelessness in work or inattention to surroundings. Of injuries to the feet of workmen, a large majority are chargeable to what the circular calls "dropsy", and the workman is reminded that the causes of accidents of this kind are purely mental, and that the remedy rests mainly with the individual.

## Cotton Belt Increases Wages

The St. Louis Southwestern and its subsidiary company in Texas have granted an increase of wages to mechanical department employees which involves about 1,140 men. The agreement, which was negotiated with the Association of Metalcraft Employees and the Association of Car Department Employees, provides for an increase of five cents an hour to journeymen and three cents an hour to helpers and apprentices. It affects gang foremen, blacksmiths, boiler makers, carmen, electrical workers, machinists, sheet metal workers, skilled helpers, regular helpers and helper apprentices. The new wage scale will result in an annual increase of the payroll of about \$122,000.

## Taplins Seek Another Injunction

The Taplin interests in the Wheeling & Lake Erie on August 7 filed an injunction petition in the federal court at Cleveland, Ohio, to restrain the abandonment of that railroad's Ontario street station property at Cleveland and its sale to the Cleveland Terminals Building Company for \$1,600,000.

The petition also asks that the Wheeling be restrained from temporarily using the Erie passenger station and tracks and from performing the contract executed by it on December 7, 1928, providing for the use of the Cleveland Union terminal, when completed. The bill of complaint further seeks to enjoin the United States and the Interstate Commerce Commission from enforcing the commission's order of July 9 authorizing the sale of the station.

The commission order authorizing the Van Sweringen interests to take possession of the station property became effective on August 9. In their petition the Taplins allege that the station sale was sanctioned by a board of directors which was not legally elected.

### "Seven O'Clockers' Club"

The foregoing is the title which has been adopted by 130 commuters who live in Philadelphia and who travel regularly to New York over the Reading and Jersey Central. These long-distance travelers have been quite numerous for several years, and an organization was formed in 1927. It is now said that an application is to be made for a corporate charter for the organization.

A special car is assigned for the use

of these passengers on the train leaving Philadelphia at 7 a. m. and on that from New York to Philadelphia at 5 p. m. It appears that more than 100 of them use the same train every week day; though occasionally individuals go on other trains, and there are some who go regularly, but not six days in the week. Most of the members do business in lower New York, so that they reach their offices within a few minutes after nine o'clock. Once a year the club members have an anniversary dinner, at which time the railroad furnishes for them a special dining car. Two members of the club are women.

The president of the club is Richard A. Wotowitch, and the secretary-treasurer is A. W. Christian; directors, Robert Hedley, Levis Ayres, Joseph Emley, M. Sloan, Major B. Foster, D. Edson and E. L. Longworthy.

On the afternoon of August 14 members of the club were entertained by the Central of New Jersey on its tugboat, Jersey Central, and taken on a sight-seeing trip around New York Bay.

### Program for General Foremen's Convention

The program for the twenty-third annual convention of the International Railway General Foremen's Association, which will be held at the Hotel Sherman, Chicago, September 17 to 20, inclusive, is as follows:

Tuesday, September 17, 9:30 a. m.

Invocation by the Rev. Wm. H. Boddy  
Address of welcome, Erwin R. Brigham, vice-president, North American Car Corporation  
Response, A. J. Armstrong, president  
Address, A. R. Ayers, general manager, New York, Chicago & St. Louis  
Response, Austin T. Streeper  
President Armstrong's address

Report of secretary-treasurer, William Hall  
Appointment of committees

Afternoon Session 2 p. m.

Topic No. 1—Inspection and Lubrication in Relation to Long Runs, Chairman, A. H. Keys, general car foreman, Baltimore & Ohio

Wednesday, September 18, 9 a. m.

Topic No. 2—Repairing Locomotives other than Steam. Chairman, M. A. Slacks, general foreman, New York, New Haven & Hartford

Afternoon Session, 2 p. m.

Motion pictures—Oxygen, the Wonder Worker, G. E. Barcke

Topic No. 3—Saving by Modern Shop Production Methods. Chairman, A. E. Iveson, general foreman, New York Central

Election of Officers

Thursday, September 19, 9 a. m.

Address, L. C. Thomson manager of stores, Canadian National Railways

Response, H. B. Sunderman

Topic No. 4—Reducing Material Delays by Proper Programming. Chairman, F. M. A'Hearn, general foreman, Bessemer & Lake Erie

Afternoon Session, 2 p. m.

Topic No. 5—Draft Gear Inspection and Maintenance. Chairman, W. J. McCloskey, general car foreman, Illinois Central

Reports of Committees

Friday, September 20, 9 a. m.

Address, Isiah Hale, safety superintendent system, Atchison, Topeka & Santa Fe

Response, C. M. Hillman

Topic No. 6—The General Foreman's Contribution to Safety First. Chairman, C. M. Hillman, shop superintendent, Minneapolis & St. Louis

Unfinished business

New business

Adjournment

The Interstate Commerce Commission announces a hearing at Washington, September 24, on the application of the Southern Freight Association, the American Short Line Railroad Association, the Atlantic Coast Line and others for a modification of the emergency routing clause of Rule 4k, I. C. C. Traffic Circular No. 20.

\* \* \* \*



Underwood and Underwood

Railway Station at Basle, Switzerland, Considered One of the Finest Examples of Railroad Architecture in Central Europe

### Items of News Concerning TRANSPORTATION

PUBLISHED IN AMERICAN  
NEWSPAPERS  
on the

### EIGHTH OF AUGUST

Nineteen twenty nine

1. Honesdale, Pennsylvania, southwestern terminus of the former Delaware & Hudson canal, 100 miles west of New York City, is celebrating the one hundredth anniversary of the Stourbridge Lion, the first locomotive to turn a wheel in the Western hemisphere. An account of the celebration appears in another column of this paper.

2. The St. Louis-San Francisco, experimenting with a new coal burning freight locomotive of the largest class reports that, in round trips with heavy trains between Kansas City, Missouri, and Birmingham, Alabama, 737 miles apart, a distance of 5,144 miles has been made without drawing the fire; and this within 20 days.

3. The Ford Motor Company, advertising its airplanes, and remarking that these planes have been operating in passenger service between Chicago and Detroit daily for years, states that on one of its schedules between these two cities there were eleven planes, or "sections" flying at over 100 miles an hour; and that they carried 118 passengers, customers of a Chicago automobile dealer.

4. Dr. Hugo Eckener, flying the giant airship "Graf Zeppelin" with which he has already crossed the Atlantic Ocean three times, started from Lakehurst, New Jersey, for Friedrichshafen, Germany, intending to fly around the world by way of Siberia, Japan and California (only three stops) and to be back in New Jersey about September 4.



## Traffic

The Nashville, Chattanooga & St. Louis, in order to make a test of the effect of lower fares has filed a tariff of reduced passenger rates with the Railroad and Public Utilities Commission of Tennessee. The new tariff names a coach fare of \$5 between Nashville, Tenn., and Memphis, where the fare is now \$8.58. The fare of \$5.51 between Nashville and Jackson is reduced to \$3 and the fare of \$3.08 between Jackson and Memphis to \$2.

The Massachusetts Department of Public Utilities has authorized the discontinuance of passenger train service, stations and facilities on the Shawmut branch of the New York, New Haven & Hartford between Neponset and Mattapan. The order is to go into effect when service for the communities on this line shall be furnished by the Dorchester extension on the Boston Rapid Transit System. This extension is now in operation as far as Ashmont. The stations on the Shawmut branch are: Neponset, Granite Avenue, Milton, Central Avenue and Mattapan.

### "Know-Mississippi-Better" Train

Foods, minerals and other valuable products of the state of Mississippi, displayed in great variety, are exhibited on a train, manned by "boosters" of that state, which is touring the eastern and central states and parts of Ontario and Quebec. The name of this train is as quoted above, and it is said to contain a variety of exhibits more extensive than any shown in the former northern trips of the Mississippi pilgrims.

### New Limited Train Between New York and Boston

The New York, New Haven & Hartford, on the completion of some new cars now being built by the Pullman Company, will run an additional express train between New York and Boston, each way, daily, the schedule of which will be less than five hours, which thus far is the best time that has been made regularly between the two cities. The fare will be higher than on the five-hour trains. It is proposed to have the trains leave each city at 4 p.m.

### A Railroad "Picnic"

Apple dealers on an Erie train en route to Toronto were tendered a supper by the railroad at Arden, N. Y., on August 12. The hosts at the supper were Charles E. Denney, president; C. C. Howard, passenger traffic manager, and R. F. O'Grady, perishable freight agent. The apple shippers were on a special train bound from New York to a convention in Toronto, Ont., and the entertainment, given in a grove near the Arden station, was in the nature of a surprise, the passengers having expected to take their evening meal in the dining car on the train.

### Refuse to Increase All-Rail Rates on Grain to Quebec

Application of the Canadian National for leave to appeal to the Supreme Court of Canada against the 18.34-cent grain rate from the head of the Lakes to Quebec city, has been refused by the Board of Railways Commissioners at Ottawa.

The order of the board from which the railway sought to appeal was dated August 26, 1927, disallowed the then existing rate of 34½ cents per hundred pounds on wheat and 33 cents per hundred pounds on other grain for export from Port Arthur, Fort William, Westford and Armstrong, Ontario, to Quebec city. It directed the Canadian National to publish and file in substitution therefor, a tariff showing a rate of 18.34 cents.

The judgment of Hon. H. A. McKeown, chief commissioner, recalls that the Grand Trunk Pacific was built primarily for the purpose of routing grain and other Canadian products through Canadian channels. The board took into account the public expenditure of \$330,000,000 on the road in arriving at what it regarded as a reasonable rate.

The railway contended that the board had made an error in law in taking the agreement of July 29, 1903, and the Crow's Nest agreement, into consideration.

When the application was before the board two months ago, chief opposition to the railroad's contention came from the Province of Quebec, while other provinces also added their protest against any increase in rates. It was pointed out that since the order was made in 1927, nearly two years had elapsed in which large expenditures had been made in Quebec and the Maritimes in connection with harbor and other facilities. Rights had been created, it was claimed, which could not now be ignored.

In concluding the judgment, Mr. McKeown declares that the dispute should not be carried any further:

"The issue is by no means clouded or obscure, and the dispute as regards the questions of fact involved in our conclusions as to the reasonableness and justice of the rate which the board has set, and the interpretation of law involved in such questions should not be carried any further. In my opinion the application must be dismissed."

### Barge-and-Rail Coal Rates Ordered

The Interstate Commerce Commission has granted to the Ohio & Mississippi Transit Company a certificate of public convenience and necessity and has ordered the establishment of through routes and joint rates on coal from mines on Green River in Kentucky over this company's boat line and certain railroads. The Ohio & Mississippi Transit Company, operating a large fleet of barges on the Green River

and to and from points on the Ohio and Mississippi Rivers, being unable to make satisfactory arrangements with the railroad companies, applied to the commission as above, setting forth that it had suitable facilities at Evansville, Ind., and at other points, to transfer coal to cars; and that it is already carrying coal, in joint service with railroads, to certain destinations in Arkansas, Louisiana and Missouri on the St. Louis Southwestern and the St. Louis-San Francisco. The company declares that it does not desire to make through rates lower than all rail rates.

The application was made public by the commission, and as no one objected to the granting of a certificate of convenience and necessity, no hearing has been held.

The roads principally interested are the Louisville & Nashville, the Missouri Pacific, the Chicago & Eastern Illinois and the Illinois Central. These presented some objections, the Illinois Central, however, objecting only to the division of rates.

The commission in requiring through rates, names the tariffs which cover the desired territory and issues the order to a large number of railroads in Illinois and other states north of the Ohio River. Chicago seems to be one of the main objective points.

This is the first application of the kind that has been filed under the law relating to rates on inland waterways. The principal tariffs referred to as requiring additions to provide for the proposed new rates are the following:

Illinois Central I. C. C. No. E-1689  
Illinois Central I. C. C. No. E-1684  
Louisville & Nashville I. C. C. No. A-15853  
Chicago & Eastern Illinois I. C. C. No. 263  
Agent C. W. Galligan's I. C. C. No. 85  
Agent C. W. Galligan's I. C. C. No. 125

The order allows the barge line and the railroads to agree on points to which through rates need not be made. The new tariffs must be filed to go into effect by November 1.

\* \* \*



A Michigan Central Electric Locomotive at Windsor, Ont.

## Foreign

### New Ticket Machines Used On British Railways

A new type of automatic ticket-issuing machine has been introduced experimentally on a London suburban railway line between Victoria (London) and Cricklewood in which the tickets are already printed and placed in the machine in a roll. When a patron desires a ticket, he places the proper amount of fare in the machine, which punches the amount of fare paid, from one penny to one shilling, the class of the ticket (whether a workman's, half-fare or straight-fare), and the point at which the passenger began his journey. The total number of tickets issued by the machine, and their total value, also are registered automatically.

Another type of ticket machine which is used on the London Underground Railways embodies what is known as a "bunch hopper," into which the passengers can drop their coins indiscriminately, instead of one at a time into a slot. The machine is designed to issue 3d. tickets, and passengers may insert three pennies, six half pennies or any other combination of pennies or half pennies which make the correct total, and receive a ticket in exchange. In the event a bent coin fails to operate the machine, it can be recovered by pressing a button.

### Federated Swiss Railways Lower Transportation Rates

Due to the increasingly keen rivalry between highway and rail transportation, the report comes from Switzerland that the Swiss Federal Railways have cut their freight charges in a new reduced tariff which took effect on August 1. Wherever highway competition has been proven in respect to l. c. l. freight weighing at least 1,500 kilos (3,300 lb.) and traveling at slow speed freight rates, a reduction is authorized. With regard to carloads, the reduction in charges is considerable, ranging, according to distance, from 15 to

40 per cent in the case of consignments coming under the general tariff, and from 1 to 24 per cent in the case of those falling under various special tariffs. The reduction is particularly marked with respect to distances not exceeding 100 kilometers (62 miles), after which the reduction diminishes gradually and reaches its minimum point at 400 kilometers (248.4 miles). Special reductions have been introduced for shipments amounting to at least 3,000 kilos (6,600 lbs.), of wines and cider, because of the brisk competition encountered from high-

way transport for these commodities.

A revision also has been made in the tariff for the carrying of special party business, which makes it possible to obtain reduced fares when the party numbers eight, and not twelve as formerly was the case. There also is considerable reduction granted in the case of parties numbering from 15 to 60 persons. The Federal Railways estimate that the introduction of reduced freight rates will entail a loss in gross revenue of about 15,000,000 francs (about \$2,895,000) per annum.

## Equipment and Supplies

### Locomotives

THE TEXAS & PACIFIC has ordered 15 of the 2-10-4 type locomotives from the Lima Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of July 27.

THE ARGENTINE STATE RAILWAYS are inquiring for two or three Garrett 4-6-2 + 2-6-4 type locomotives. Augusto Krause Arnin is administrator general at San Jose, 180 Buenos Aires, Argentine Republic, South America.

### Freight Cars

THE CENTRAL OF GEORGIA is inquiring for 500 gondola cars.

THE ATCHISON TOPEKA & SANTA FE is inquiring for 200 steel underframes for gondola cars of 50 tons' capacity.

THE NORTH AMERICAN CAR CORPORATION has ordered 500 tank cars of 8000 gal. capacity from the Pressed Steel Car Company.

THE CHICAGO GREAT WESTERN has ordered two caboose cars from the Mt. Vernon Car Manufacturing Company.

THE ELGIN, JOLIET & EASTERN has ordered 25 air dump cars of 35 cu. yd. ca-

capacity from the Magor Car Corporation and 25 from the Differential Steel Car Company.

THE READING COMPANY has ordered 200 gondola cars from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of July 6.

THE GREAT NORTHERN has ordered 300 flat cars from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of July 20.

### Passenger Cars

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 12 steel underframes for baggage cars.

THE CONSOLIDATED RAILROADS OF CUBA have ordered four combination passenger and baggage gasoline rail motor cars from the J. G. Brill Company.

THE CHICAGO & ALTON has ordered two 60-ft. postal cars, two 70-ft. combination passenger and baggage cars and one 70-ft. baggage and mail car from the Pullman Car & Manufacturing Corporation.

### Iron and Steel

THE BOSTON & ALBANY has ordered from the McClintic-Marshall Company 600 tons of steel for a roundhouse.

THE ERIE has ordered from the American Bridge Company 250 tons of steel for two bridges.

THE SEABOARD AIR LINE has ordered 185 tons of steel for a bridge at Raleigh, N. C., from the American Bridge Company.

THE NEW YORK CENTRAL has ordered 250 tons of steel for a bridge at Syracuse, N. Y., from the McClintic Marshall Company.

THE NORTHERN PACIFIC has ordered 400 tons of steel for a viaduct at Superior, Wis., from the American Bridge Company.



New Station of the Atlantic Coast Line at Punta Gorda, Fla.



THE MICHIGAN CENTRAL has ordered 800 tons of structural steel for grade separation work in Detroit, Mich., and vicinity from the McClintic-Marshall Company.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 1,900 tons of steel for a car repair shop at Milwaukee, Wis., from the Worden Allen Structural Iron and Steel Company.

THE BOSTON & MAINE has ordered 275 tons of steel for three bridges from the Boston Bridge Works; an order for 200 tons of steel for two bridges has been given to the Virginia Bridge & Iron Company.

THE PENNSYLVANIA has ordered from the McClintic-Marshall Company 600 tons of steel for various bridges; an order has been given to the American Bridge Company for 500 tons of steel for a bridge at Coatesville, Pa.; an order has been given to the Phoenix Bridge Company for 4,500 tons of steel for a bridge over the Hackensack river, and an order has been given to the Bethlehem Steel Company for 10,000 tons of steel for another bridge over the Hackensack river.

## Signaling

THE NEW YORK, CHICAGO & ST. LOUIS has contracted with the General Railway Signal Company for the installation of an electric interlocking plant at East 75th street, Cleveland, Ohio. Color light signals will be used.

THE CLEVELAND UNION TERMINALS COMPANY has contracted with the General Railway Signal Company for the installation of automatic block signals between East 105th street and East 140th street, Cleveland, Ohio; 20 signals, color-light Type SA.

THE RICHMOND, FREDERICKSBURG & POTOMAC has contracted with the Union Switch & Signal Company to extend its automatic train control system, furnishing and installing all material. The territory to be covered consists of a total of nine miles, double track; between Richmond, Va., and "NA" and between Potomac River Bridge and "AF".

THE ERIE has contracted with the Union Switch & Signal Company for the installation of automatic block signals on its line between Cuba Junction, N. Y., and Hornell, 51 miles. Color-light signals will be used. The order includes also 28 highway crossing signals, type HC-5, and apparatus for remote operation of a switch at the junction of single track and double track at Oakley, the operator to be at Hornell.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company material for an electro-pneumatic push button machine at Fifty-second street yard, Philadelphia, Pa. The machine will be 84-way. The Pennsylvania also has ordered from the Union, apparatus for a dispatcher control system to be installed between Vandale, Ind., and Berlin, 7 miles, double-track.

The offices of the Curtin-Howe Corporation have been moved to 415 Lexington avenue, New York.

The Wagner Electric Corporation, St. Louis, Mo., has moved its Cleveland, Ohio, service station and branch sales office to 3756 Carnegie avenue in that city.

The American Hoist & Derrick Company, St. Paul, Minn., has established a branch office at 5800 Bingham avenue, Detroit, Mich., which will be in charge of G. J. Heck, sales representative of the company.

George R. Harrison has been appointed Cleveland representative for the Reading Chain & Block Corporation, Reading, Pa. Mr. Harrison will have his headquarters at 362 Rockefeller building, Cleveland, Ohio.

The Lincoln Electric Company, Cleveland, Ohio, has placed contracts for the erection of an addition to its plant. The new structure will be about 200 ft. by 110 ft. and will be entirely of welded construction. It will house a 65-ft. span electric traveling crane. The steel is now being fabricated by the arc welding process in the structural mill of the Austin Company, Cleveland, who designed and will erect the building.

The sales department of the Page Steel & Wire Company has been moved from Bridgeport, Conn. to the American Bank building, Pittsburgh, Pa. Sales of chain link fence will be handled by R. J. Teeple; field fence and general wire products by S. B. Cairns; welding wire and specialties by J. J. Flaherty. W. T. Kyle, general manager of sales of the company has his headquarters at the general sales office, 230 Park avenue, New York City.

The Direct Steaming Company of Canada, Limited, Kingston, Ont., has been formed under a Canadian charter to install direct steaming systems and related power plant equipment at locomotive terminals in Canada under an agreement with the Railway Engineering Equipment Company, Chicago. William Casey, vice-president and general manager of the Canadian Locomotive Company, has also been elected president of the new company. Other officers are S. C. Holland, vice-president and general manager of the R. W. Mitchell Company, and G. P. Bogert, vice-president and general manager of the Dominion Oxygen Company, vice-presidents, J. M. Hickey, secretary, and G. W. Daly, treasurer. In addition to Mr. Casey, Mr. Holland and Mr. Bogert other members of the board of directors are J. G. Forster, vice-president, Ogle Construction Company, and L. G.

Plant, president, Railway Engineering Equipment Company.

Phil Arnold, who has been appointed vice-president in charge of sales of the Garlock Packing Company, with headquarters at Cleveland, Ohio, was born at Jeffersonville, Ind., on May 19, 1883. He graduated from the Joplin (Mo.) high school in 1902 and entered business life with the Day Rubber Company, St. Louis, Mo., where he served for a year as a salesman in Oklahoma and Indian territory. In 1904 he became connected with the Denver Rubber Company in the Northwest, then being appointed



Phil Arnold

manager of the retail department in 1906. Mr. Arnold entered the service of the Garlock Packing Company in 1908 as sales representative in Iowa and Nebraska. The following year he was transferred to the Chicago railroad territory and in 1912 he was appointed manager of the railroad department. From 1913 until his election as vice-president in charge of sales he served as district manager of sales at Cleveland.

Cecil R. Hubbard, who has been elected vice-president in charge of production of the Garlock Packing Company, with headquarters at Palmyra, N. Y., has been connected with that company since 1923. He was born on July 25, 1886, at Norwich, England, and received his academic and a mechanical and electrical engineering training in the King Edward VI school and the Norwich Technical Institute in that city. Mr. Hubbard began his business career as an apprentice in the electrical works of the City of Norwich. Later he came to the United States and was engaged in the design of power plants and equipment with the Westinghouse Electric & Manufacturing Co., in the development of new products of the National Metal Molding Company, Ambridge, Pa., and as mechanical superintendent

and technical supervisor of the mechanical goods division of the United States Rubber Company at Providence, R. I., and Cleveland, Ohio. In October, 1923 he was appointed production manager of the Garlock Packing Company, a position he held until his election as vice-



Cecil R. Hubbard

president in charge of production. During his engineering career Mr. Hubbard has obtained patents on 33 articles and processes connected with the rubber industry.

## Obituary

Luther B. McMillan, chief engineer of the Johns-Manville Corporation, New York, died in a hospital on August 10 from the effects of injuries received in an airplane accident the previous day at the municipal airport at Newark, N. J.

\* \* \*



Type of Color Light Signal Used on the Missouri Pacific

## Construction

**BOSTON & MAINE.**—The New York Public Service Commission has advised this company that it does not consider as excessive the bid of Collins Brothers, Mechanicville, N. Y., amounting to \$25,032 for construction work in connection with changing the manner of the crossing of the Schuylerville state highway over this company's tracks one mile west of Victory Mills, N. Y. The contract will be awarded soon. The Commission also has approved bids for work in connection with the reconstruction of a bridge carrying this company's tracks over the Northern Turnpike in Troy, N. Y. The bids, for which contracts will be awarded soon are as follows: the Boston Bridge Works, Boston, Mass., for steel superstructure, \$13,000; the Abbott-Connolly Construction Company, Allston, Mass., for general contract work, \$17,676.

**CANADIAN NATIONAL.**—Contracts have been let for the grading and installation of culverts for 261 miles of new branch line construction in Alberta and Saskatchewan and bids have been received or have been requested for the construction of 227 more miles of branch line in Alberta, Saskatchewan, Nova Scotia and Prince Edward Island. The contracts for grading and installation of culverts have been awarded as follows: Melfort, Sask., to Aberdeen, 89 miles, to Stewart & Cameron, Winnipeg, Man., estimated cost, \$2,800,000; Central Butte, Sask., to a point 50 miles southwest near Turnhill, to W. A. Dutton, Winnipeg, estimated cost \$1,800,000; Neidpath, Sask., to the Canadian Pacific near Swift Current, 31 miles, to the Western Construction Company and Gibbs Brothers, North Battleford, Sask., estimated cost \$1,200,000; Unity, Sask., southwest 50 miles to a point near the Saskatchewan-Alberta border, to the Brooks Construction Company, Prince Albert, Sask., estimated cost \$1,750,000; Hemaruka, Alta., to Scapa, 41 miles, to Foley Brothers, Ltd., Winnipeg, estimated cost \$1,435,000. The proposed lines for whose construction it is expected that contracts will be let immediately are as follows: Hamlin, Sask., to Glenbush, 33 miles, estimated cost \$1,150,000, bids were closed on July 22; St. Walburg, Sask., to Bonnyville, Alta., 117 miles, estimated cost \$4,212,000, bids were closed on July 22; Sunnybrae N. S. to Guysborough, 67 miles, estimated cost \$3,500,000, bids to be requested in September; Lake Verde, P. E. I., to Pisquid, 10 miles, estimated cost \$370,000.

**CHICAGO & NORTH WESTERN.**—A contract has been let to the H. A. Peters Company, Chicago, for the construction of a one-story and basement brick and concrete fireproof oil storage building at the Chicago avenue shops, Chicago. A contract for the installation of the oil handling facilities has been let to S. F. Bowser & Co., Inc., Ft. Wayne, Ind. The building will have outside dimensions of

50 ft. by 150 ft. and will involve a total expenditure of \$150,000. It will serve as an oil distributing station for the entire railroad. A contract for the construction of a 10-stall addition to the roundhouse at Council Bluffs, Iowa, has been awarded to G. A. Johnson, Council Bluffs.

**CHICAGO, ROCK ISLAND & PACIFIC.**—A contract for the construction of a freight station on Sixteenth street, Omaha, Neb., has been let to the Parsons Construction Company, Omaha. The building, which will be of brick and concrete construction, will have outside dimensions of 32 ft. by 360 ft.

**DELAWARE & HUDSON.**—This company has been advised by the New York Public Service Commission that the commission does not consider as excessive the bid of Walter S. Rae, Pittsburgh, Pa., for the construction of a bridge to carry the company's tracks over a highway in Malta, N. Y. The figure set by the contractor is \$59,711.75.

**GREAT NORTHERN.**—This company has amended its application for authority to construct a line into Northern California to provide for a route from Klamath Falls, Ore., through the Klamath Valley and Tule Lake district to a terminal at or near Bieber, Calif., to meet a proposed extension of the Western Pacific. The revised line would have a route mileage of 87½. The company has likewise amended its application with respect to an extension from a connection with its line at Richey, Mont., to Jordan, 105 miles, to be financed from current funds.

**ILLINOIS CENTRAL.**—This company plans the expenditure of \$86,000 for the construction of approaches at Vicksburg, Miss., and Delta Point, La., to the new bridge over the Mississippi river between these points. The work involves the construction of 6,000 ft. of second main track at Vicksburg and 5,000 ft. of passing track at Delta Point.

**LEHIGH VALLEY.**—The New York Public Service Commission has set the estimate of cost in connection with the elimination of the Getzville road crossing on this company's lines in Amherst, N. Y., at \$169,829. The commission also placed the estimate for the elimination of the Sheridan drive elimination in Amherst, on this company's lines, at approximately \$194,410.

**NEW YORK CENTRAL.**—A list of sixteen grade crossings on this company's lines, in Westchester county, N. Y., to be eliminated during 1930, has been presented to the Westchester County Board of Supervisors by County Engineer Charles MacDonald. All of the crossings are on the Harlem, Hudson or Putnam divisions of the company and are located as follows: Broadway, Cross street and Old Tarrytown road crossings in Mt. Pleas-



ant, on the Harlem division; the Bedford road and Rebecca avenue crossings in Pleasantville Village, on the Harlem division; the Cross River road and Hubbells Cross road crossings in Bedford, on the Harlem division; the Mile Square road and Palmer avenue crossings in Yonkers, on the Putnam division; the Chappaqua road and Campfire road crossings on the Putnam division and the Roaring Brook road on the Harlem division in New Castle; Ashford avenue in Ardsley Village, on the Putnam division; Pleasantville avenue in Cortlandt, on the Hudson division; Lovell street in Somers, on the Putnam division, and Underhill avenue in Yorktown, on the Putnam division.

**PENNSYLVANIA.**—This company has awarded a contract to Dinella Brothers Company, Pittsburgh, Pa., for construction work in connection with the elimination of a highway grade crossing on its lines in Caledonia, N. Y. The project will cost approximately \$65,120.

**PENNSYLVANIA.**—This company has awarded contracts for construction work on its lines totaling \$3,044,000, as follows: to the Bethlehem Steel Company, Bethlehem, Pa., for the furnishing and erection of a lift span, towers and approach spans for its passenger line bridge over the Hackensack river at Marion, N. J., to cost \$1,445,000; to the Phoenix Bridge Company, Phoenixville, Pa., for the furnishing and erection of a lift span, towers and approach spans for a freight line bridge at the same location to cost about \$670,000; to Senior & Palmer, Inc., N. Y., for masonry work on west approach to the passenger bridge at Marion, N. J., to cost about \$576,000; to J. Rich Steers, Inc., New York, for masonry work on east approach for both freight and passenger line bridges at the same location, estimated to cost \$150,000; to McKelvy-Hine Company, Pittsburgh, Pa., for the construction of an underpass to eliminate a highway grade crossing at Salem, O., to cost about \$82,000; to the

Stillman-Delehanty-Ferris Company, Jersey City, N. J., for the renewing of the deck on a portion of stock yards pier at Jersey City, N. J., at an expenditure of about \$71,000; and to the T. J. Foley Company, Pittsburgh, Pa., for the reconstruction of an overhead highway bridge west of Coatesville, Pa., to cost about \$50,000.

**SOUTHERN PACIFIC.**—The San Antonio & Aransas Pass has applied to the Interstate Commerce Commission for authority

to construct a 1.5-mile line near the Houston Ship Channel in Houston, Tex.

**THE ATCHISON, TOPEKA & SANTA FE.**—This company will close bids on August 19 for the construction of an addition to its hospital facilities at Topeka, Kans.

**WESTERN PACIFIC.**—This company has applied to the Interstate Commerce Commission for authority to construct a 3¼ mile branch line from Hart, Calif. to Disappointment Slough to serve a beet sugar factory.

## Railway Finance

**BALTIMORE & OHIO.**—*Bonds.*—The Baltimore & Ohio Southwestern has applied to the Interstate Commerce Commission for authority to extend the maturity date of \$45,000,000 of its mortgage bonds which expired in 1925 to 1950, raising the interest rate from 3½ per cent to 5 per cent. The bonds are held by the parent company, which wishes to extend the maturity and raise the interest rate to make the issue more attractive as collateral security for a like amount of its Southwestern division first mortgage bonds issued and outstanding.

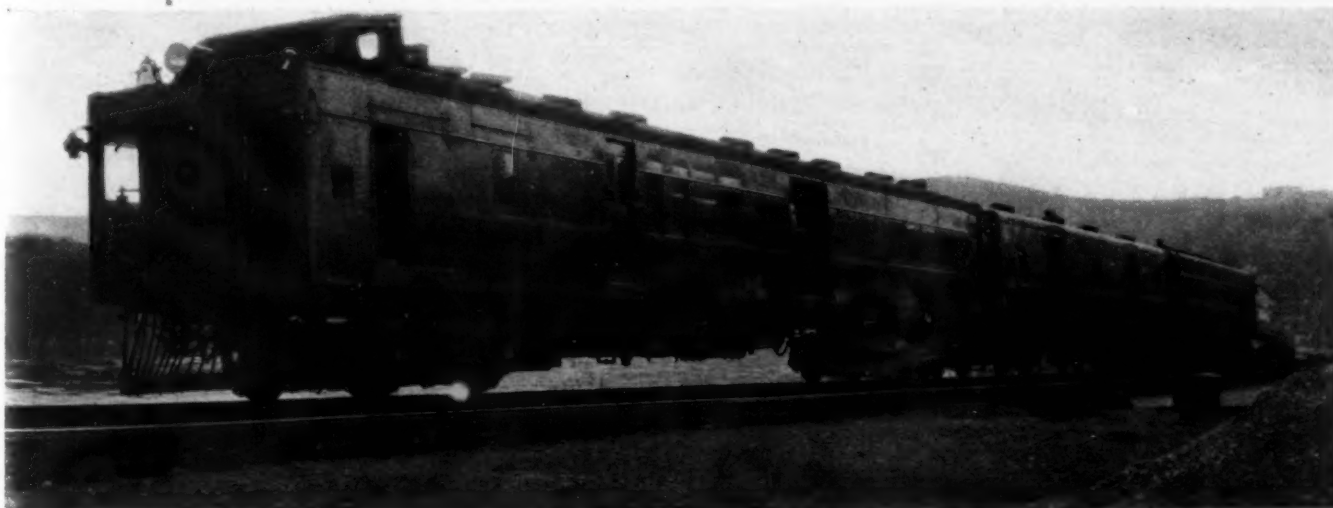
**BELLEFONTE CENTRAL.**—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue \$200,000 of first mortgage, 20-year 6 per cent sinking-fund bonds, said bonds to be sold to William Marriott Canby, Philadelphia, and others at 90, which would make the cost to the railroad 6.944 per cent.

**FLINT RIVER & NORTHEASTERN.**—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell \$125,000 of its 6 per cent first mortgage bonds at par, maturing in 1949, the proceeds to be used to retire a like amount of bonds which matured on July 1, 1929.

**KANSAS CITY SOUTHERN.**—*Bonds.*—The Arkansas Western has applied to the Interstate Commerce Commission for authority to issue \$425,000 of first mortgage bonds to mature in 1950.

**INTERNATIONAL CARRIERS, LTD.**—*A New Railroad Investment Trust.*—Announcement has been made of the formation of this company as an investment trust to deal in railroad stocks with an initial authorized share capitalization of about \$25,000,000 and a directorate including railroad executives. It may include foreign railroads in its holdings. The company was organized in Maryland with an authorized capitalization of 1,000,000 no-par shares. The directors will include W. B. Besler, chairman of the Central of New Jersey; Edward N. Brown, chairman of the St. Louis-San Francisco; Calvin Bullock, president of the International Superpower Corporation; W. W. Colpitts of Coverdale & Colpitts, railroad engineers; Alfred Jaretski, Jr., of Sullivan & Cromwell, and Theodore G. Smith, vice-president of the Central Hanover Bank & Trust Company. Initial investments include stock in the Alleghany Corporation, Atchison, Topeka & Santa Fe, Baltimore & Ohio, Bangor & Aroostook, Canadian Pacific, Chesapeake & Ohio, Chicago, Mil-

\* \* \* \*



A Motor Train on the Lehigh Valley at Meshoppen, Pa.

waukee, St. Paul & Pacific, Chicago & North Western, Rock Island, Erie, Kansas City Southern, Nickel Plate, New Haven, Norfolk & Western, Northern Pacific, Pennsylvania, Pere Marquette, St. Louis-San Francisco, Southern Pacific, Southern and Union Pacific.

**NEW YORK CENTRAL.—Big Four Securities.**—The Interstate Commerce Commission has authorized the protective committee of the minority stockholders of the Cleveland, Cincinnati, Chicago & St. Louis to intervene in the proposed issue of securities by the latter company to be guaranteed by the New York Central.

**NEW YORK & LONG BRANCH.—Capital Stock.**—This company has applied to the Interstate Commerce Commission for authority to increase its capital stock from \$2,000,000 to \$4,000,000. It proposes also to issue \$538,000 of consolidated mortgage bonds. The purpose is to reimburse the Central of New Jersey and the Pennsylvania for sums advanced for improvements.

**PENNSYLVANIA.—Bonds.**—The Pittsburgh, Cincinnati, Chicago & St. Louis has applied to the Interstate Commerce Commission for authority to issue \$13,297,000 of its 4½ per cent general mortgage bonds, series C, to be dated July 1, 1927, and to mature 50 years thereafter, the bonds to be guaranteed by the Pennsylvania and delivered to it at par to be applied upon indebtedness of the Panhandle.

**SOUTHERN.—Control of M. & O. and N. O. & N. E.**—The Interstate Commerce Commission in an amended complaint calls upon this company to show cause by November 4, why an order should not be entered requiring it to divest itself of all interest, direct or indirect, in the capital stock and bonds of the Mobile & Ohio, and in the capital stock of the New Orleans & North-Eastern. The commission has reason to believe, it says, that the Southern has violated the law against unlawful restraints and monopolies. The complaint says that about March 1, 1901, the Southern issued its Mobile & Ohio collateral trust indenture to the Guaranty Trust Company of New York as trustee, to secure its Southern-Mobile and Ohio collateral gold bonds in the amount of \$9,500,000, payable Sept. 1, 1928, and bearing 4 per cent interest. It is charged that the Southern by exchanging its stock trust certificates and receiving therefor 56,702 shares of capital stock of the Mobile & Ohio, "and by reason of respondent exchanging its Southern-Mobile & Ohio collateral gold bonds and receiving therefor Mobile & Ohio general mortgage bonds of May 15, 1888, in the aggregate amount of \$7,957,000, with the voting rights vested therein as aforesaid, respondent did acquire a majority of the share capital and did acquire the control of the Mobile & Ohio without the approval and authorization of the Interstate Commerce Commission and in violation of Section 7 of the Clayton act." The complaint also alleges that the effect of the acquisition of the Mobile & Ohio "may be to substantially lessen competition" between that road and

other lines of the Southern system, "and to restrain commerce in certain sections and communities." The commission further charges that during the latter part of 1910 and at a later period the Southern acquired 59,801 shares out of an outstanding total of 60,000 shares of the New Orleans & North Eastern without the approval of the Interstate Commerce Commission and in violation of the Clayton act. The commission makes the same complaint on the control of the N. O. & N. E., that it "may be to substantially lessen competition," and to "restrain commerce in certain sections and communities."

**ST. LOUIS SOUTHWESTERN (of Texas).—Lease of Steventown North & South Texas.**—This company has been authorized by the Interstate Commerce Commission to continue, under supplementary lease, in control of the Steventown North & South Texas for a further period of two years from July 1.

**TRINITY & BRAZOS VALLEY.—Receiver's Certificates.**—The receiver of this property has applied to the Interstate Commerce Commission for authority to issue \$648,560 of sixth series receiver's certificates to mature not later than January 1, 1931; interest, 6 per cent. It is proposed to sell the issue to the Rock Island and the Colorado & Southern at par.

**YANKTON, NORFOLK & SOUTHERN.—Bonds.**—This company has amended its original finance application to the Interstate Commerce Commission to request authority to issue not to exceed \$3,000,000 of 6 per cent first mortgage bonds, \$900,000 of these bonds to be allocated to the purchase of the stock of the Meridian Highway Bridge Company and the extinguishment of its bonded indebtedness and the remainder to be delivered to the Fidelity Construction Company in varying amounts as this company progresses with its construction work in behalf of the applicant.

#### Average Prices of Stocks and of Bonds

	Aug. 13	Last week	Last year
Average price of 20 representative railway stocks.	153.52	152.24	116.98
Average price of 20 representative railway bonds.	90.11	90.64	91.85

#### Dividends Declared

Canadian Pacific.—Common, \$2.50, quarterly; preferred, \$2.00, semi-annually, both payable October 1 to holders of record August 30.  
Chicago, Rock Island & Pacific.—Common, \$1.75, quarterly, payable September 30 to holders of record September 6.  
Chicago, South Shore & South Bend.—Preferred A, 1½ per cent, quarterly, payable September 2 to holders of record August 20.  
Cleveland & Pittsburgh.—\$87½, quarterly; special guaranteed, \$.50, quarterly, both payable September 1 to holders of record August 10.  
Delaware, Lackawanna & Western Coal Company.—\$2.50, quarterly, payable September 16 to holders of record August 31.  
Louisville, Henderson & St. Louis.—2½ per cent, quarterly, payable August 15 to holders of record August 1.  
St. Louis-San Francisco.—Common, 2 per cent, quarterly, payable October 1 to holders of record September 3.  
Southern Pacific Company.—1½ per cent, quarterly, payable October 1 to holders of record August 26.  
Union Pacific.—Common, 2½ per cent, quarterly; preferred, 2 per cent, semi-annually, both payable October 1 to holders of record September 3.

## Officers

### Executive

**Richard F. Hoyt** has been elected vice-president of the Ray & Gila Valley, with headquarters at New York.

**R. M. D. Richardson** and **Michael Jerome** have been elected vice-presidents of the Louisiana & Arkansas, with headquarters at New York.

**E. W. Beatty**, president of the Canadian Pacific, has also been elected president of the Northern Alberta. **Sir Henry Thornton**, president of the Canadian National, has also been elected vice-president of the Northern Alberta.

**W. M. Harvey**, who is connected with the staff of the vice-president in charge of finance and accounting of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, has also been elected president and treasurer of the Chicago, Milwaukee & St. Paul, which will continue its corporate existence until all securities of the old operating company have been retired. **C. E. Oliphant**, chief statistician of the C. M. St. P. & P. at Chicago, and **R. M. Calkins**, formerly assistant to the receiver, have been elected vice-president. **T. W. Burtness**, secretary of the C. M. St. P. & P., has been elected to a similar position with the C. M. & St. P. and **C. A. Peterson** has been elected comptroller.

**H. T. Malcolmson**, who has been appointed vice-president and general manager of the Toronto, Hamilton & Buffalo, with headquarters at Hamilton, Ont., was born on May 22, 1877, at Hamilton, Ont., and was educated in the public schools. He entered railway service in April, 1899, with the Grand



H. T. Malcolmson

Trunk at Toronto, Ont. From September, 1899, until June, 1903 he held various clerical positions with the Toronto, Hamilton & Buffalo, and from the latter date until March, 1912, was chief clerk to the general superintendent. He then became car accountant on the



same road, which position he held until January, 1914, when he became superintendent of car service. From April, 1914, until the early part of 1925 Mr. Malcolmson served as superintendent at which time he became acting general manager. In June of the same year he was appointed general manager, which position he was holding at the time of his recent appointment.

## Financial, Legal and Accounting

**C. V. Jenkins** has been appointed secretary and treasurer of the Ray & Gila Valley, with headquarters at New York.

**C. H. Hickie**, general paymaster of the Central region of the Canadian National, with headquarters at Toronto, Ont., has been appointed treasurer and paymaster of the Northern Alberta, with headquarters at Edmonton, Alta. **F. J. Kavanagh**, auditor of joint facilities of the Canadian Pacific, with headquarters at Montreal, Que., has been appointed auditor of the Northern Alberta, with headquarters at Edmonton. The positions of general paymaster of the Central region of the Canadian National and auditor of joint facilities of the Canadian Pacific have been abolished. **Henry Phillips**, assistant secretary of the Canadian National, with headquarters at Montreal, has also been appointed secretary of the Northern Alberta.

## Operating

**Robert W. Thomas** has been appointed general superintendent of the Ray & Gila Valley, with headquarters at Ray, Ariz., succeeding **C. A. Smith**.

**R. Norwood** has been appointed trainmaster on the Alexandria district of the Louisiana & Arkansas, with headquarters at Alexandria, La.

**John Callaghan**, deputy minister of railways and telephones for the Province of Alberta and general manager and chief engineer of the Edmonton, Dunvegan & British Columbia, has been appointed general manager of the Northern Alberta, with headquarters as before at Edmonton, Alta.

**R. A. Mills**, engineman on the New York division of the Eastern region of the Pennsylvania, has been appointed assistant trainmaster and assistant road foreman of engines of the Maryland division. **J. A. Gilliland**, acting assistant trainmaster of the Middle division, has been appointed assistant trainmaster at the Altoona Works.

**O. E. West**, assistant chief of yard and terminal operations of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed chief of yard and terminal operations, with the same headquarters, succeeding **E. T. Horn**, who has been relieved of active

service owing to ill health. Mr. West was born on June 9, 1880. He entered the service of the Baltimore & Ohio on May 2, 1903, as a freight brakeman on the Ohio division, being advanced to freight conductor in February, 1918. The following month he became night yardmaster. Six months later he was advanced to the position of general yardmaster at Chillicothe, O., and on January 16, 1921, was transferred to St. Louis, Mo., in the same capacity. On March 1 of that year Mr. West became



O. E. West

district supervisor of terminals at Toledo, O., and in April, 1925, was appointed assistant chief of yard and terminal operations, which position he was holding at the time of his recent appointment.

**Lee H. Landis**, who has been appointed general manager of the Chesapeake Beach Railway, with headquarters at Washington, D. C., was born at Cerro Gerdo, Ill., on July 7, 1872. He was educated in the Lancaster, Pa., high school and the University of California

Harris & Ewing  
Lee H. Landis

and entered railway service in 1890 with the Philadelphia & Reading. From 1893 to 1894, he was agent and despatcher for the Chicago, Burlington & Quincy. From the latter date until 1905, Mr. Landis was general agent of the Santa

Fe at Phoenix, Ariz., and from 1905 to 1909, he served in a similar capacity on the Southern Pacific at the same point. He was appointed general manager of the Phoenix & Buckeye in 1910 and the following year he became general manager of the Ocean Shore Railroad (operation of the latter road has been discontinued). From 1912 to 1915 Mr. Landis was assistant to the president of the Tidewater Southern. In 1916 he was appointed general manager of the Fresno Interurban Railroad and the following year he became eastern agent of the Associated Oil Company of California. From 1918 to September, 1919, Mr. Landis served with the A.E.F. in France, then becoming industrial commissioner for the Western Pacific, where he remained until October, 1923, at which time he became general manager of the Alaska Railroad. From November, 1927, to February, 1929, Mr. Landis was director of public relations for the Western Pacific, in which capacity he served until his recent appointment as general manager of the Chesapeake Beach Railway.

## Traffic

**W. H. McCloud** has been appointed general agent of the Chicago, Springfield & St. Louis at Detroit, Mich.

**W. N. Adams** has been appointed executive general agent of the Louisiana & Arkansas, with headquarters at New Orleans, La.

**O. Garcia Corral**, traveling freight and passenger agent of the Missouri Pacific at Mexico City, Mex., has been promoted to general agent at Monterrey, N. L., succeeding **E. F. Sada**, deceased.

**E. G. Gerrman**, advertising manager of the Louisiana lines of the Southern Pacific, with headquarters at New Orleans, La., has also been appointed advertising manager of the Texas lines, with headquarters at Houston, Tex.

**Merle W. Dancy**, executive general agent of the Chicago & Alton at St. Louis has resigned, effective September 1, to become chief traffic officer of the newly organized barge line operating between Cincinnati, O., and New Orleans.

**Frank J. Berry**, general agent of the Northern Pacific at Spokane, Wash., has been promoted to assistant general freight agent at Seattle, Wash. **J. Roddy**, general agent at San Francisco, has been transferred to Spokane to succeed Mr. Berry.

**Raymond W. Anderson**, assistant general freight agent of the Buffalo, Rochester & Pittsburgh, with headquarters at Rochester, N. Y., has been promoted to the position of coal traffic manager, with the same headquarters. **Joshua E. Steele**, has been promoted to the position of district freight agent, with headquarters at Rochester.

## Engineering, Maintenance of Way and Signaling

**R. B. Hennessy** has been appointed bridge engineer of the St. Louis-San Francisco with headquarters at St. Louis, Mo., succeeding **Ralph E. Miller**, deceased.

**C. F. Miller**, supervisor on the Pittsburgh division of the Pennsylvania at Gallitzin, Pa., has been promoted to assistant division engineer on the Eastern division.

**A. F. Randolph**, assistant to division engineer of the Middle division of the Pennsylvania, has been appointed engineer in the office of the chief engineer maintenance of way, with headquarters at Philadelphia, Pa.

## Purchase and Stores

**A. B. Rutherford**, stationer of the Union Pacific Railroad, has been promoted to general stationer of the Union Pacific system, with headquarters as before at Omaha, Neb.

**F. W. Mahl**, general purchasing agent of the Southern Pacific, with headquarters at San Francisco, Cal., after more than thirty years of service, has been granted a leave of absence pending retirement. The jurisdiction of **F. W. Taylor**, purchasing agent at San Francisco, has been extended to cover activities heretofore handled by the general purchasing agent.

**H. L. Taylor**, who has been promoted to purchasing agent of the Western region of the Canadian National, with headquarters at Vancouver, B. C., has been connected with that railway and its predecessor companies for 19 years. He entered railway service in July, 1906, in the freight station of the Canadian Northern (now part of the Canadian National) at Winnipeg, Man., where he

remained until 1912 when he entered the purchasing department of the MacKenzie Mann Construction Company, Winnipeg. In 1916 Mr. Taylor was appointed assistant purchasing agent of the Canadian Northern, with headquar-



H. L. Taylor

ters at Winnipeg, retaining this position when the Canadian Northern was absorbed by the Canadian National in 1920. He served as assistant purchasing agent at Winnipeg until his recent promotion to purchasing agent of the Western region.

## Obituary

**J. Ward Allison**, freight traffic manager of the Western Maryland, with headquarters at Baltimore, Md., died in that city on July 5.

**James A. Hutchison**, who served as chief medical officer of the Grand Trunk and its successor, the Canadian National, from 1891 to 1926, died at North Hatley, Que., on June 30, after an illness of a year.

**Thomas Rodd**, former chief engineer of the Pennsylvania and the Chicago

Union Station Company, died at Pittsburgh, Pa., on August 3. He was born at London, England, on June 13, 1849, and after graduating from the United States Naval Academy, entered the office of the city engineer of Philadelphia, Pa., in 1869. Three years later he entered railway service as an assistant engineer on the Pennsylvania. In 1877 he was promoted to principal assistant engineer, with headquarters at Pittsburgh. In 1889 Mr. Rodd was promoted to chief engineer of the Pennsylvania Company, with headquarters at Pittsburgh, a position he held until his retirement from Pennsylvania service in 1919. From 1901 to 1919 he also served as chief engineer of the Pennsylvania Lines West of Pittsburgh and from 1913



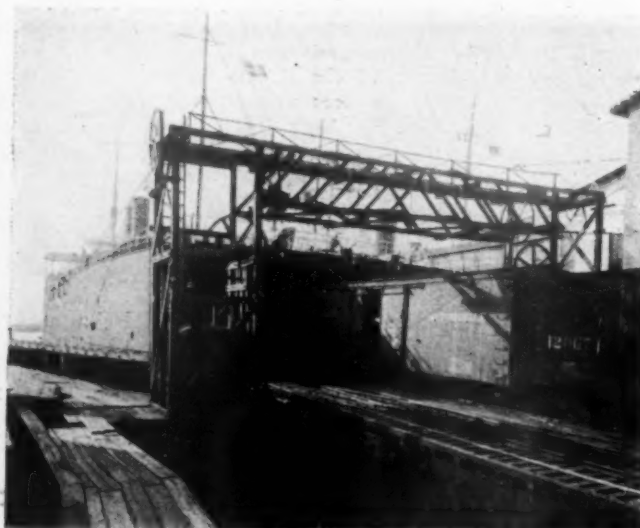
Thomas Rodd

to 1919 he acted also as chief engineer of the Chicago Union Station Company. From 1919 to 1927 he served as consulting engineer of the Chicago Union Station Company. Prior to 1903 Mr. Rodd was also engaged in private engineering practice. It was under Mr. Rodd's direction that the Union Station at Chicago was designed and construction started.

\* \* \* \*



Handling Sheet Steel on the D. & R. G. W., at Salt Lake, Utah



Florida East Coast Photo.

Florida East Coast Ferry Between Key West, Fla., and Havana, Cuba, Discharging Cars at Havana